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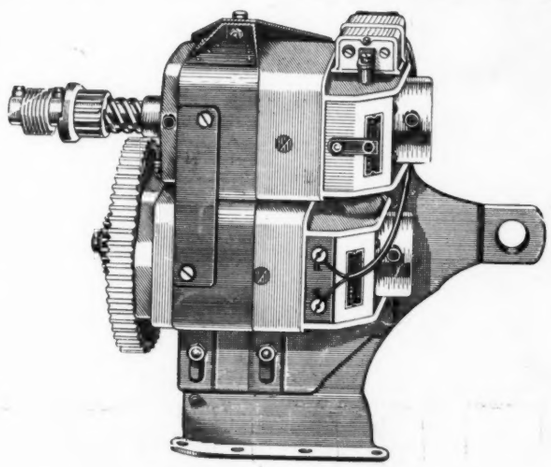

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Inquiries and orders are pouring in—and in answer the new Stewart V-Ray Spark Plugs are being shipped out in larger quantities every day.

The demand is steadily growing.

Car owners who formerly clamored in vain for V-Rays will now be able to get them.

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And V-Ray production will keep up with it.

Wise dealers are getting in on the ground floor. Wire today.

"It will pay you to see that the car you own is equipped with Stewart Products"

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Chicago, Ill., U. S. A.

The AUTOMOBILE

VOL. XXXV NEW YORK—THURSDAY, OCTOBER 12, 1916—CHICAGO NO. 15

Form Eastern Motors Syndicate

Organization To Plan High-Grade Car To Be Built by Eastern Motors, Inc.

HARTFORD, CONN., Oct. 10—The Eastern Motors Syndicate has been organized and financed in this city for the purpose of designing and preparing all details of a proposed high grade automobile. This new car will incorporate many refinements that will appeal to the most fastidious. The manufacture of the car will be taken over by the Eastern Motors, Inc., which will be organized for purposes of manufacture and sale, the development, however, resting with the Eastern Motors Syndicate.

The Eastern Motors Syndicate has at present an option on two plans and a final selection of a factory location is expected to be made in the near future. Allen Shelden, chairman of the Eastern Motors Syndicate, has the organization work in charge, and has developed plans of co-operation with dealers in connection with merchandising of product.

Others connected with the organization are: Willis D. Upson, Waterbury, Conn., as treasurer. He is a man familiar with the automobile industry. L. S. Hubbard, Bridgeport, Conn., is secretary; and is manager of a large business in that city. F. A. Law, formerly chief engineer of the Pope Mfg. Co., and more recently connected with Selden, Brewster and Gaston, Williams & Wigmore, is chief engineer.

—

Webster Heads Racine Rubber

RACINE, WIS., Oct. 9—Stuart Webster has been elected president of the Racine Rubber Co., Racine, Wis., manufacturer of tires and tubes, to fill the vacancy caused by the resignation of H. L. McClaren, who recently resigned as president of this company and also of the Mitchell Motor Corp., Racine, the ownership of which is closely allied with the tire company. Mr. Webster was one of the original officers of the tire company, which was first established in March, 1910.

He first held the position of treasurer, but in 1915 he was elected vice-president and general manager. This position has been turned over to Louis T. Vance, who has been factory manager since 1911. H. C. Severance remains as secretary and general sales manager. The office of treasurer is combined with that of president.

The Racine Rubber Co. is now doing a business amounting to $5,000,000 annually and employs from 900 to 1000 men. The daily output exceeds 1500 tires and the same number of tubes.

—

Hudson 1917 Price $175 Higher

NEW YORK CITY, Oct. 10—On Dec. 1, the Hudson Motor Car Co. will advance the price of its various models by $175. On May 9 last, the company raised its prices $100 on its various models, due to the very greatly increased cost of materials.

The new price on the phaeton model and the two-passenger will be $1,650, while the four-passenger roadster type will sell for $1,700; the cabriolet at $1,950 and the sedan at $2,175.

—

Chalmers to Raise Prices $70

DETROIT, MICH., Oct. 9—The Chalmers Motor Co. announces an increase in the price of several of its models. The seven-passenger touring car now selling for $1,280 will be increased to $1,350; the sedan selling at present for $1,760 will cost $1,850; the town car and limousine will raise in price from $2,480 to $2,550. The increase in price becomes effective on Dec. 1.

Perfection-Stanweld Merger?

Negotiations Now Under Way May Mean Consolidation of Cleveland Firms

CLEVELAND, OHIO, Oct. 7—A merger of the Perfection Spring Co. and the Standard Welding Co., both of this city, may shortly be completed. The consolidation has been approved by the boards of directors of both companies and now awaits the ratification of the stockholders.

The combination would result in one of the strongest factors in the industry, producing among other parts and accessories, automobile springs, heaters and rims.

The capital stock of the Perfection Spring Co. is $2,500,000 authorized, which is divided into $1,000,000 preferred and $1,500,000 common; $1,250,000 of common stock has been issued.

The capital stock of the Standard Welding Co. is $2,225,000 of which $2,206,800 is outstanding all of which is one class.

Holders in both companies will be given the privilege of converting their securities into those of the new corporation. This company will have an authorized stock of $25,000,000 common stock and $10,000,000 7 per cent cumulative stock preferred. Borton & Borton, a Cleveland investment house, will underwrite the stock to be issued. The two companies have combined total assets of $10,000,000.

The Perfection Spring Co. which manufactures automobile springs and at present supplies more than thirty large automobile makers of this country, employs between 1700 and 1800 men. It commenced business 10 years ago in

(*Continued on Page* 636)

4000 Wintons for Next Year

$1,500,000 New Capital Will Be Used to Enlarge Production Facilities

CLEVELAND, OHIO, Oct. 7—Following the sale of $1,500,000 7 per cent cumulative preferred stock to Borton & Borton, as reported in THE AUTOMOBILE last week, the Winton Co. will enlarge its production facilities with the new capital thus provided. For the past 12 months orders have been filled from 6 weeks to 6 months later than specified and, while the company intends no change in its policy of limited production, more flexibility was necessary.

Up to 1916 the Winton Co. built between 1200 and 1300 cars a year, but during the past 12 months over 2000 cars have been sold and production for the coming year is estimated at 4000. The company's production of gas and oil engines of the Diesel type has also increased and a part of the new capital will be devoted to the engine factory.

—

McCornack Is Hudson Sales Manager

DETROIT, MICH., Oct. 5—O. H. McCornack, who for the past 6½ years has been the purchasing agent for the Hudson Motor Car Co., has been appointed to succeed E. C. Morse, who recently resigned to become the vice-president in charge of the sales division of the Chalmers Motor Co. The Hudson company also appointed O. Barit, former assistant purchasing agent, to succeed Mr. McCornack as purchasing agent.

—

Bailey To Manage Cook's Patent Assn.

DETROIT, MICH., Oct. 5—G. Franklin Bailey has been appointed manager of the Cook's Patent Association, which controls the claimed basic patent for truck-making attachments for pleasure cars. Mr. Bailey was formerly the advertising manager of the New York *Globe* and more recently was connected with Charles T. Silver, Chalmers distributor in New York.

—

Pulcher Heads New Detroit Club

DETROIT, MICH., Oct. 9—M. L. Pulcher will be the first president of the new Detroit Automobile Club when the organization perfects its charter membership plans. Mr. Pulcher is the vice-president and general manager of the Federal Motor Truck Co.

W. S. Gilbreath, secretary of the club, announces that charter members are rapidly being signed and that the 1000 mark will soon be reached.

The club incorporates a novel and interesting clause in its charter membership application which reads: "We do further agree, in furtherance of the interests of said Organization, to abide by and comply with all State Laws and City Ordinances governing and controlling traffic on the public highways in the State, and streets and highways in the cities, and to co-operate with and assist officials in every manner possible in compelling proper enforcement of said laws."

—

Gray Heads Hess-Bright Co.

PHILADELPHIA, PA., Oct. 7.—B. D. Gray has been elected president of the Hess-Bright Mfg. Co., this city, manufacturer of ball bearings. Mr. Gray, who was formerly vice-president, succeeds F. E. Bright, who will remain identified with the company as chairman of the board.

—

Hamilton Chief Engineer for Oakland

DETROIT, MICH., Oct. 9—A. C. Hamilton of the experimental department at the King Motor Co. plant in Detroit, has been appointed to be chief engineer for the Oakland Motor Co., to succeed Eric Wahlberg who recently resigned to join the Nash organization in the Jeffery plant at Kenosha, Wis.

—

Weaver Returns to Timken Axle

DETROIT, MICH., R. B. Weaver has returned to the Timken-Detroit Axle Co., as chief engineer, succeeding J. G. Perrin, who resigned.

—

Anderson Is Madison Sales Mgr.

INDIANAPOLIS, IND., Oct. 7—Harry W. Anderson has been appointed sales manager of the newly organized Madison Motors Corp. of Anderson, Ind. Mr. Anderson was formerly sales manager of the Stutz Motor Car Co.

—

Newmark Succeeds Eustis with Chevrolet

NEW YORK CITY, Oct. 9—John R. Eustis has resigned as advertising manager of the Chevrolet Motor Co. and will be succeeded by J. H. Newmark., advertising manager of the Apperson Bros. Automobile Co., Kokomo, Ind. Mr. Eustis, before joining the Chevrolet company last May, had been motor truck editor of the *Evening Mail* for 5 years. Mr. Eustis will devote most of his time to publicity work.

—

Bias Is Mitchell Purchasing Agent

RACINE, WIS., Oct. 7—M. C. Bias has been appointed purchasing agent of the Mitchell Motors Co., this city, succeeding Guy Morgan, resigned. Mr. Bias has been identified with the Mitchell company since 1909.

Standards Men to Meet Oct. 18

Will Hold Its Session in Bureau of Standards at Washington

NEW YORK CITY, Oct. 10—By the courtesy of Dr. Stratton the October meeting of the S. A. E. standards committee will he beld in the U. S. Bureau of Standards at Washington, next Wednesday. On Monday and Tuesday there will be various division meetings and these may also be held in the bureau.

At Wednesday's meeting practically all the divisions will have reports to make and some of them are of particular interest. Firstly the electrical equipment division has much to say on the subject of headlamps and the standardization which is going to settle the glare problem. This work is nearing completion. In the evening, after the meeting, some demonstrations will be made with actual lamps to show the committee how the division has approached the problem, and to indicate the effect of the application of the standards suggested.

Will Discuss Trucks

The military truck specifications are not in shape to go before the committee in the form of a report, but they will be discussed informally and no doubt the division will receive many valuable suggestions. The proposed details of standard truck control will be ready for acceptance and this is one of the most important parts of any truck standard that can be created. Of course it is not intended that this standard control shall apply only to military vehicles, but to all trucks as far as possible. A standard control would mean that any driver could operate any truck with equal safety. Having once learned on one machine he would find nothing strange in handling another.

The October meeting is not faced by so full a program as was the meeting in May, since less committee work is done in the summer months which make the vacation season. None the less, nearly every division has something to report and a number of new standards will be ready for transmission to the society.

—

Wright Is Cassidy Special Representative

NEW YORK CITY, Oct. 7—E. C. Wright, former eastern district sales manager for the Carter Carburetor Co., has joined the selling staff of the E. A. Cassidy Co., this city, as official representative. Mr. Wright will spend considerable time in the automobile manufacturing centers, in addition to looking after the selling interests of the company among the large distributers.

Used Car Show for Chicago

City's Automobile Trade Assn. Schedules Exhibition in Coliseum for May 8-14

CHICAGO, ILL., Oct. 10—A used-car show will be held May 8 to 14 in this city at the Coliseum by the Chicago Automobile Trade Assn., which has been working on this proposition for a year.

Space in the Coliseum will be sold at 40 cents per sq. ft., assignment to be by public drawing. The dealers will show rebuilt cars which they represent and other used cars they have taken.

The trade association will get one-half the profits, which will be divided among the members, the Coliseum getting the other half.

Tickets are to be 25 cents each. It is figured it will cost the exhibitors $60 per car for space.

—

Boone Is Disco Chief Engineer

DETROIT, MICH., Oct. 9—S. W. Elston, president of the Disco Electric Starter Corp., has secured John T. Boone as chief engineer for the Disco company. Mr. Boone was formerly chief engineer for the Heinze Electric Co., of Springfield, Ohio.

—

Rainier Motor Corp. Chartered

NEW YORK CITY, Oct. 10—The Rainier Motor Corp. has been chartered in this state with a capital to $600,000 to manufacture the Rainier truck. The incorporators are J. T. Rainier, P. N. Lineberger, and J. A. Rainier.

—

Trailer Makers Form Association

DETROIT, MICH., Oct. 10—Fifteen trailer manufacturers met here today and formed a permanent organization to be styled the Trailer Manufacturers Association of America. It contemplates a model trailer ordinance and other legislation and publicity. The officers are: President, C. A. Geiger, president Troy Wagon Works, Troy, N. Y.; vice-president, Miss K. Gleason, Rochester Trailer Co., East Rochester, N. Y.; secretary-treasurer, J. C. Endebrook, Sechler Co., Cincinnati. The temporary chairman was C. W. Shipley, of the Sechler Co. A. W. Keesler, Watson Wagon Co., Canastota, N. Y., acted as temporary president. An executive committee of four was named.

—

May Copy Ford's Sales Plan

DETROIT, MICH., Oct. 7—The new departure of the Ford Motor Co., whereby it has given up its branches and allowed a general scramble for agencies, has set some of the big officials of other concerns thinking, with the result that before show season there is likely to be a similar plan adopted by others. Some of the companies that are making large productions now calculate that where they have one large distributor for a place, say like New England, a group of Southern, Western or Pacific States are wondering if it would not be possible to put over more cars if there were not one big distributor directing the affairs of his subagents, and have a lot of dealers, in fact like Ford, more than one in big cities.

—

Metz Sales Plan Similar to Ford's

WALTHAM, MASS., Oct. 7.—The Metz Co. has signed a lease to take over a new building that is in process of erection on Commonwealth Avenue, Boston, Mass., which will be its general sales and service station for that city. It has sold its lease on the building 195 Massachusetts Avenue, Cambridge, Mass., where it conducted its sales department since it closed its Boston office. The general sales will be conducted from the factory at Waltham until the new building is ready for occupancy.

The Metz company inaugurated a plan similar to the Ford of closing its branches and substituting agencies, and at Worcester the Reo-Worcester Co. is its agent, while the Fiske & Naylor Co., at Providence, R. I., is its agent there. When the Boston building is finished the Metz company will also have other agents in that city handling its line.

—

Stanley Is Briscoe Asst. Sales Manager

DETROIT, MICH., Oct. 6.—John L. Stanley has been appointed assistant sales manager of the Briscoe Motor Corp., Jackson, Mich. Mr. Stanley was formerly with the Paige distributer at Kansas City and prior to that time with the Mitchell and Jeffery Co. as district sales manager.

—

War Exports Gain $86,802,054 Over 1914

NEW YORK CITY, Oct. 10—Shipments of U. S. A.-Built automobiles and motor trucks to Europe for war purposes during the fiscal year 1916 totaled $86,802,-054 more in value than in the fiscal year 1914, according to statistics issued by the U. S. Treasury department. The total value of cars and trucks shipped to warring countries for military purposes this year was $120,000,860, as compared with $33,198,806 in 1914.

—

Wisconsin Trucks in Production

SHEBOYGAN, WIS., Oct. 7—The Myers Machine Co. is now making regular deliveries of the Wisconsin motor truck. The company was reorganized several months ago to purchase the Wisconsin Motor Truck Co., Baraboo, Wis.

McFarlan to Make Expansion

Reincorporates with $3,000,000 Capital as McFarlan Motor Corp.

CONNERSVILLE, IND., Oct. 10—The McFarlan Motor Co. has been reincorporated at $3,000,000 as the McFarlan Motor Corp. and will expand its business. The officers, car and price will remain the same but later the company will build a high-priced truck. The incorporation is under Delaware laws. The old capitalization is comparatively very small, and the new plan means considerable added capital.

—

Chandler to Continue Present Model

CLEVELAND, OHIO, Oct. 9—The Chandler Motor Car Co., this city, will continue its present model for the coming season and there will be no reduction in the price. There is a probability that the price will be advanced.

—

New Era Buys Sly Tire Specialties

NEW YORK CITY, Oct. 10—The tire holder and tire lock business of the W. W. Sly Mfg. Co., Cleveland, has been purchased by Smalley Daniels, president of the New Era Spring & Specialty Co., Detroit, which has for 5 years been the sales department for those products.

The New Era company will remove the business to Detroit or Grand Rapids and combine its shock absorber and bumper plant and increase the tire holder production.

—

Hoyt Joins Bour-Davis

DETROIT, MICH., Oct. 10—G. W. Hoyt has been made production and factory manager of the Bour-Davis Motor Car Co., this city. He was formerly publication engineer of the company. Before joining this company, Mr. Hoyt was associated with Ray Harroun as assistant in the engineering department of the Nordyke & Marmon Co., Indianapolis, and later with the Maxwell company.

—

General Tire Adds Two Directors

AKRON, OHIO, Oct. 7.—G. F. Burkhardt of Akron, and J. A. Diebolt of Cleveland have been elected directors of the General Tire & Rubber Co., increasing the board to seven members. Charles Herberich, vice-president and treasurer of the Depositors Savings & Trust Co., has been elected treasurer. Other officers of the company are: M. O'Neil, president; W. F. O'Neil, vice-president and general manager; and W. E. Fouse, secretary.

BRAZIL

Large Field for Motor Truck Sales in State and City of Sao Paulo—Rio de Janeiro Can Also Use a Great Many Commercial Vehicles

Part III

By David Beecroft

EDITOR'S NOTE:—This is the third of a series of articles embodying the close observations of automobile and general trade conditions in Brazil made by Mr. Beecroft, Directing Editor of THE AUTOMOBILE, during a 10-weeks' trip through Argentina, Uruguay and Southern Brazil as a delegate of the United States Government and member of the Argentine Return Visit Committee. Subsequent articles will further analyze the possibilities of selling cars, trucks, and tractors in the United States of Brazil.

BOTH the State and City of Sao Paulo present a large field for motor truck sales, although one handicap in the State's road system is that most of the roads are private ways through the large plantations. There is not a completé system of public highways as we have in the U. S. A. Because of this when you make a trip in an automobile across the country you are constantly bothered opening and closing gates which admit you to different plantations. You frequently find one such gate every 3 or 4 miles. These gates are often padlocked and you must get permission to proceed from the owner before it swings open to admit you.

The city of Sao Paulo is a good market for trucks. True, the city is not nearly as large as Buenos Aires or Rio de Janeiro but it is growing very rapidly. To-day its population is approximately 500,000 and in 10 years it is expected there will be over 1,000,000 people. The buying capacity of Sao Paulo city for automobiles and motor trucks can scarcely be gaged by a population estimate. Its purchasing capacity is much greater than either Rio, Buenos Aires or Montevideo in ratio to population.

The city has increased nearly twenty-fold in the last 30 years. The great activity in the coffee area has been largely responsible for this growth, but to-day the city has within its boundaries so many activities and distributes to so large an area that its future as the second greatest and perhaps the greatest distributing city in all South America seems assured. Buenos Aires will unquestionably lead for many years, but Sao Paulo is sooner or later going to pass Rio as a great city. Perhaps this may not be in population but in energy, influence and progressiveness.

Ideal Streets for Trucks

The city is well paved and almost ideal for motor trucks. The newer streets are very wide. It is true that several of the older streets in the center of the city are narrow, but they are generally one-way thoroughfares, which helps traffic materially. As with all South American cities, the pavement is stone block with asphalt on the finer avenues. Sao Paulo reminds you much of Buenos Aires, with its wide streets radiating into every part of the city. These streets have double trolley lines, fine wide sidewalks and the usual strip of greensward between the curb and the sidewalk.

With relation to the truck-buying capacity of Sao Paulo it is best to bear in mind that there is an unusual concentration of business activities. An example: One hardware importer has large blocks of stock in six other diversified interests, such as a wire factory, a textile mill, a match factory, a hardware metal stamping plant and a wholesale provision store. Reaching this one man opens the possibility of selling trucks in six different industries. This is true with regard to many of the leading business men of the city. A second example: One large industry owner has a controlling interest in ten different concerns, some merchandising and others manufacturing plants. In addition he has a large interest in twelve other organizations. Here is a man with great influence in twenty-two different organizations. This particular person has his own steamboats and does an enormous business. Selling trucks to such a person and through him making it possible to reach twenty-two concerns, gives a new phase to motor truck sales and should tend to make the introduction of trucks into the city relatively easier and simpler than if individuals were largely tied to a single organization.

National City Bank Branch

In Sao Paulo the National City Bank of New York has had a branch for 2 or 3 years. This branch is already doing good work to make it easier for U. S. A. motor truck makers to do business in the City of Sao Paulo and also throughout the entire State. The bank maintains a large commercial department whose duties are entirely concerned with securing information on the different industries of the State as well as on the financial standing and the business honesty of the many firms of the State. This department has a corps of competent workmen, the same as in all of the other cities in South America where this bank has recently opened branches.

From this bank it is possible to get the financial standing of any house with which a U. S. A. truck maker would hope to open agency relations. It is possible to-day to get as accurate information on such firms as on firms in New Orleans or Buffalo. All of such arrangements should be taken up through the main office of the bank in New York City.

We spent nearly half a day with the head of this department going over the various industries in the City of Sao Paulo with the hope of seeing how many concerns are large enough and financially strong enough to be owners of motor trucks or motor delivery wagons. The bank has a complete

list of all business organizations in the city and has investigated them individually. Many of these concerns are manufacturers, others are large importers, others large wholesalers and others engaged in the various lines of business that are to be found in any city.

162 Firms Need Trucks

We found there are 162 large concerns in the city who should be owners of motor trucks. Many of these should own fleets of trucks and delivery wagons. This estimate of 162 concerns is very conservative. No effort was made to make a big list, rather the idea was to be ultra conservative. It would be possible to double this number if you wanted to include those whose business is large enough to warrant the use of trucks. We differentiated between concerns having a business large enough to warrant their using motor trucks and those who are large enough and who are also financially strong enough to warrant their buying such at once.

This list of 162 large and financially strong concerns included all lines of business and the following gives a few of the more important ones. However, it must be remembered that these are only the more important of the industries of the city, or those who are obviously most in need of the improved transportation facilities brought by the introduction of motor trucks into their businesses. There are a number of other fields which should be considered.

Agricultural Implements.—There are twelve large firms importing such machinery from the U. S. A. and Europe. They generally carry very varied lines, including large supplies of spare parts. Not infrequently these firms sell automobiles, and also deal in mill machinery and machinery that can be used in garages such as lathes, drills, presses, etc.

Biscuit Factories.—There are two large ones and many smaller ones. The large ones should be using motor trucks. There are several of the smaller ones that would be warranted in using light delivery jobs.

Breweries.—There are two large breweries in the city and one in Ribeirao Preto, a city of 25,000 and 241 miles north in the heart of the coffee country. The use of trucks in the brewery trade in Sao Paulo is identical with that in any U. S. A. city.

Wholesale Clothing.—Ten large concerns are engaged in this work. They have to transport the goods from the depot to their warehouses and then make city distribution to the different retailers. There is much teaming from the warehouse to the depots for shipment to interior cities and towns.

Dry Goods Importers.—There are in addition to the above nine dry goods importing houses. These firms have the usual use for trucks, transporting goods to and from warehouses.

Hardware Importers.—Sao Paulo has nineteen hardware importers, all handling varied lines of hardware merchandise and machinery. They have wide distribution to retailers and sell generally to other firms in the State and in adjoining States. Several of these importers are also large wholesalers.

Textile Mills.—There are all told about twenty-nine textile mills in the city. These mills vary in size, some being small and some large. All have a legitimate use for trucks. They will require vehicles of different capacity. They may require trucks for general use around the factory as well as the handling of raw and finished materials.

Sawmills.—Six sawmills are located within the city and there is much handling of logs and of the sawn lumber. There is delivery to lumber yards and for shipment by railway.

Importers of Provisions.—There are seven of these, all large concerns, and in addition are many smaller ones.

Shoe Factories.—The city has five factories given over to the manufacture of shoes. The leather has to be brought to the factory and deliveries of shoes to wholesale and retail local houses as well as to depots.

General Importers.—Six of these concerns, the largest in the field, have general use for trucks.

Leather Goods.—Four houses are devoted to this work.

Avenida Tiradentes, Sao Paulo, not the best, but one of the imporant residential streets of that city which is called the Chicago of Brazil. This avenue is a triple roadway and is an ideal street for motor traffic. There are many such in the city. Avenida de Paulista is the finest residential street of the city and motor trucks are not barred on the street. The city of Sao Paulo is located practically on the edge of the coffee country and all of the coffee shipped passes through the city by train

You see many streets like this in the towns and cities of the coffee areas in the State of Sao Paulo. This is a residential street in the city of Ribeirao Preto, a city of 25,000 in the heart of the coffee country. The streets are well paved, and everything is very clean. This city is distinguished as being the home of Santos Dumont, the Brazilian aviation hero. The city is destined to be a big coffee growing center. Recently the Ford dealer opened a selling branch there

In addition to these there are many other lines, as follows:

	No. Concerns		No. Concerns
Wholesale drugs	5	Meat packers	2
Electric goods	3	Lime maker	1
Foundries	3	Lead pipe factory	1
Glass factory	1	Campinas importers	3
Retail grocers	2	Screw factory	1
Contractors	2	Soap factory	2
Flour mills	3	Sugar mills	2
Hat factories	2	Wholesale stationery	2
Hop dealer	1	Rope factory	1
Jute mills	2	Silk factories	2
Newspapers	3	Seeds, etc.	3

To this list could be added scores of other concerns. No attention has been given to the hundreds of small shops who should be in the market for light delivery wagons of 500 or 800-lb. capacity. There are scores of bakeries, small grocers, etc. None of them is aware of the increased possibility of using light delivery wagons. They are inclined to look upon the light motor vehicle too much as merely an expense and an advertisement. They have not had it placed before them as an investment. They have not grasped the feature of extending business by the motor vehicle. They have not thought of improved service to customers because of faster and better delivery service.

Horse Labor Is Cheap

Horse labor is naturally cheap in the city. The grade of horseflesh is poor. The city, being in the tropics, is hot. The altitude assists in keeping the temperature lower, but in summer the heat is always present. Up to the present horseflesh has been considered very cheap, and the business houses have not carefully kept tab on what their horses really cost them.

There is a truck market in Sao Paulo. It is the best in Brazil at present. Perhaps in other years Rio will be greater but to-day it is not nearly so attractive as Sao Paulo. The city has plenty of good garages. There are plenty of places where you can get any kind of a good body built for a motor truck. In the city is one of the largest garages in South America. It has a body building department for passenger cars and trucks. Limousines and landaulets are made. It has every facility for the work. The U. S. A. truck maker will find no difficulty in getting any kind of truck body.

There are plenty of live automobile dealers in Sao Paulo. A few of them handle trucks. There should be no difficulty in making good truck selling connections.

How to Enter the Market

With regard to introducing trucks in the city the only way is to send one or two trucks there and demonstrate them. That is imperative. In addition there must be a big supply of spare parts carried in the city. You cannot sell vehicles without such stock of parts. You must have catalogs in Portuguese as well as lists of spare parts and instruction books in the same language. These should be ready when the trucks are shipped. You need them then and not a year later. Good exporting policies are needed in connection with truck sales.

Although the City of Rio de Janeiro is anything but an active motor truck market to-day there are notwithstanding good possibilities of selling trucks there when financial conditions improve and perhaps when the price of gasoline falls a little.

We made a careful estimate of the number of large industrial and other concerns in the city who are not using trucks but have a volume of business that would warrant the use of trucks, and their financial condition would also warrant their use. This list was made from the financial reports of the commercial department of the National City Bank of New York, which has a Rio office.

Without in any wise exhausting the field we found over 375 concerns that should be using motor trucks to-day. Some of these concerns are very strong financially, others not so strong have a big volume of business. For these firms motor trucks of all different load-carrying capacity are needed. Some will require fleets and others only individual vehicles.

Converting Passenger Cars

Although the sale of motor trucks practically ceased in Rio nearly 3 years ago there has been a growing movement by way of making old passenger cars into light delivery vehicles, and it is not uncommon to see a Renault or Benz converted into a 1500-lb. light delivery vehicle. This movement augurs favorably for a rapid development of the light delivery vehicle, because Rio merchants have just as much need for it as the merchants in any other city of nearly 1,000,000 population. Rio has really more need for motor vehicles than any city of its population, due to the hot weather. The city is located at water level and in the summer months of December, January and February it is very hot. In the Fall and Winter months you are quite comfortable in a palm beach suit.

In a short résumé of the concerns in the market for motor vehicles, no names will be given, but only a conception of the number of firms in different industries.

Meat Industry—As in all hot cities the question of meat delivery from the municipal slaughter houses is important. The animals are slaughtered in the morning and the meat must be in all butcher shops a few hours later. There is a good field for motor trucks here just as in Buenos Aires. In Rio are over 100 concerns in meat delivery trade who should be using motor vehicles of one type or another.

Seed Merchants—Of the firms engaged in the grain business ten at least should be using trucks. They have much

shipping as well as much delivery work to do.

Wholesale Textiles—At least twelve firms in this line would be warranted in using motor trucks. Brazil is a large textile industry, so far as South America is concerned.

Textile Factories—There are thirty of these factories within the city. All should be truck users. The raw products have to be taken to the factory, and the finished products delivered to depots, warehouses, etc. It is the general line of factory work.

Confectionery Houses—Over thirty houses in this line should use trucks. They will generally want light-capacity machines, although a few of them with large distribution will want the heavier-capacity vehicles.

Wholesale Houses—Rio is the big wholesale center for Brazil, its merchants selling to all of the twenty-one states, but not so generally in some lines as might be expected, due to such centers as Santos and Sao Paulo, Bahia, Para, Manaos, etc., buying direct and distributing to their own states.

There are ten wholesale grocers who could use trucks to advantage, twelve wholesale drug houses and many machinery houses.

Factories—Rio has quite an extensive and growing manufacturing colony, reference having already been made to its thirty textile factories. It has twelve shoe factories, six hat factories, five flour mills, three of which are very large, and two tanneries.

Business Houses—There are many business houses that should be in the truck market. They have to be convinced that their business warrants motor power. In this line are twenty furniture houses; you can add six important piano firms; add also twenty machinery houses, which do a big business in all kinds of machinery; then there are four firms in the mineral water trade; there are six concerns in the cigar and cigarette trade; you will find six concerns needing trucks for general milk distribution, four others in the hide-buying business; and a general line of others.

Contracting Firms—Rio has the usual number of firms in cartage trade, but like other tropical cities, has hundreds of individuals who have only a poor cart and a still poorer horse or mule.

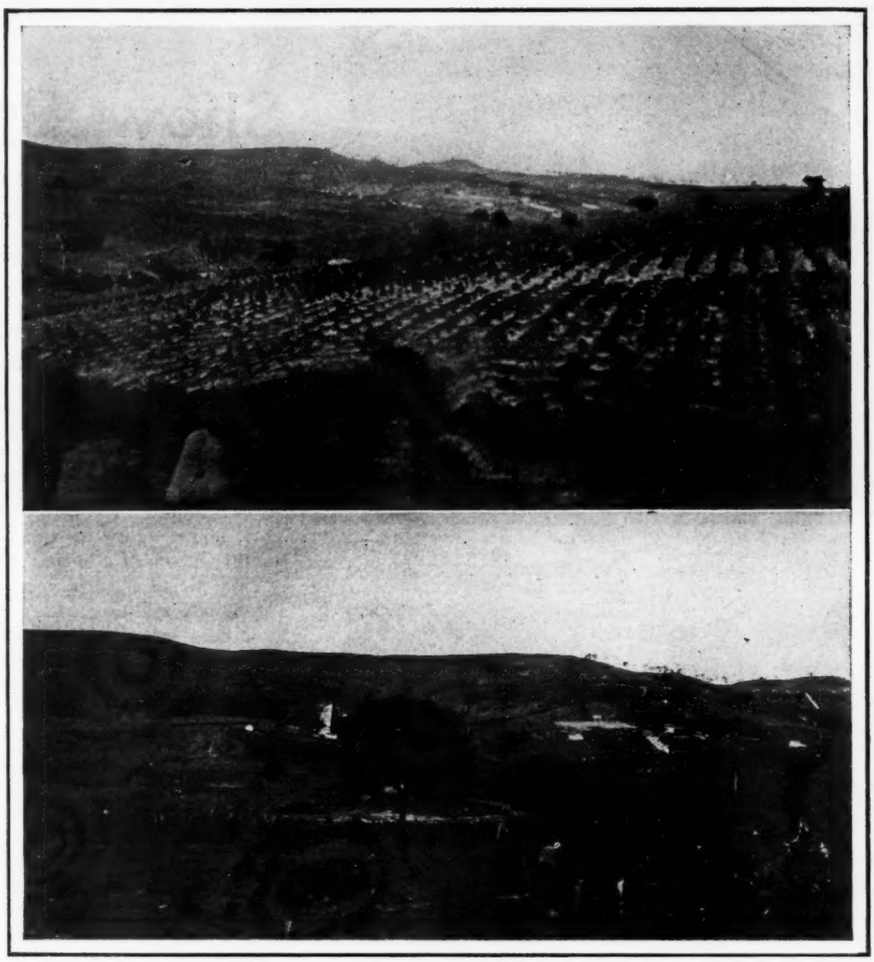
There are fifteen cartage houses who should be general users of motor transport. Their work embraces all possible lines. The city streets are generally good and conditions relatively favorable for the use of trucks.

The city has eight building construction firms, each having the usual needs for trucks; add to this two firms specially engaged in street pavement and other city improvement lines; to these can be added several city departments.

Department Stores—Rio has twelve department stores that should be buyers of trucks and deliveries. To this can be added twelve retail hardware houses. You may also add six hotels who have use for motor buses and baggage wagons.

Rio as a city should be a big truck field. This field may not be so large as its population would lead you at first thought to imagine. This is due to the high percentage of African population. Also do not forget that the city is surrounded by mountains without any roads leading to outlying cities. You cannot possibly go 40 miles out of the city. Rio, while fortunate in enjoying perhaps the finest scenic location of any city in the world, is not surrounded with a rich farming or mineral land that would call for a general use of trucks leading into the fertile areas around the city. Sao Paulo occupies a great advantage in this respect in that the coffee land lies all to the north and west of it. The trucks for Rio are for use only within the boundaries of the city.

(*To Be Continued*)



At the top is shown a very poor coffee plantation. The bushes are not as large as they should be and some of them have perished. You rarely see a single acre of land in the country that is level. It is all rolling and when motoring along the roads you have many good hill-climbs to contend with. It is this rolling nature that makes the land more suitable for motor truck use. It will not be difficult to build good roads in such a country. There will always be good natural drainage. Directly above is a view of the rolling coffee country in the center of the State of Sao Paulo. It is through this country that many U. S. A. motor trucks will be sold in the next 5 or 10 years. The white buildings on the hillside mark the home of a coffee plantation owner. Around his home he has all the necessary tanks for soaking the coffee and terraces on which it is afterward dried

Turpentine as Fuel

The English market has been flooded with gasoline substitutes, since the use of gasoline has been restricted by law. *The Engineer* (London) states that nearly all these substitutes consist of kerosene with a small admixture of some other substance, and need an admixture of an equal quantity of gasoline before they are readily usable. It is also stated that some "substitutes" are mixtures of kerosene with turpentine. It would be interesting to know the exact function of the latter liquid.

Samuel Miles
Show Mgr., N. A. C. C.

C. C. Hanch
Treas., Studebaker Corp.

H. M. Jewett
Pres., Paige-Detroit Motor Car Co.

F. Jewett
Vice-pres., Paige Detroit Motor Car Co.

Show Spaces Allotted

New York Gains Fourteen Exhibitors Over Car Manufacturers at New York and

NEW YORK CITY, Oct. 5.—Ninety-eight automobile concerns, including five manufacturers of electrics, were allotted space at the New York show at to-day's meeting of the National Automobile Chamber of Commerce. This compares with eighty-four last year. Space was given to ninety-four automobile concerns for the Chicago show, as against ninety last year. Every foot of available floor space in Grand Central Palace has been taken, several of the new companies being placed on the fourth floor with the accessory exhibits. As at the New York show, space at Chicago is limited on account of the large number of space allotments.

This meeting each year is the big get-together assembling of automobile makers, who are usually in attendance or represented by others prominent in the business activities of the companies. To-day's meeting was the largest in point of attendance in the history of the Chamber, there being more than 100 automobile manufacturers represented. Charles Clifton, president of the organization, presided at the general meeting in the morning, and S. A. Miles, manager of the shows, came down from his summer home at Christmas Cove, Me., to preside at the space allotments.

That the meeting was a representative one is manifested by the list of those in attendance, including John N. Willys, Hugh Chalmers, W. E. Metzger, A. P. Chalfant, H. H. Franklin, W. C. Leland, Elwood Haynes, E. J. Moon, W. T. White, W. H. Van Dervoort, H. M. and F. Jewett, L. H. Kittredge, Charles Clifton, C. C. Hanch, C. W. Churchill and F. C. Chandler.

Overland in First Position

Willys-Overland, as in the past 3 years, again had the honor of selecting the first position, on account of having been the leader in the volume of business for the year. Following came Buick, Studebaker, Dodge and Maxwell, Cadillac, Chevrolet, Chalmers, Hudson, Packard, Reo, Oakland, Saxon, Hupp, Chandler and Olds. Others up in the drawing were Paige, Mitchell, Haynes, Pierce, Franklin, Nash, Cole, Velie and Stearns.

List of Manufacturers of Gasoline and Electric Automobiles Allotted

Car Exhibitors at New York

Main Floor—Automobile Section

Allen Motor Co.....Fostoria, Ohio
Buick Motor Co.....Flint, Mich.
Cadillac Motor Car Co.....Detroit, Mich.
Chalmers Motor Co.....Detroit, Mich.
Chandler Motor Car Co.....Cleveland, Ohio
Chevrolet Motor Co., of Michigan.Flint, Mich.
Cole Motor Car Co.....Indianapolis, Ind.
Dodge Bros.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Grant Motor Car Corp.....Findlay, Ohio
Haynes Automobile Co.....Kokomo, Ind.
Hudson Motor Car Co.....Detroit, Mich.
Hupp Motor Car Corp.....Detroit, Mich.
King Motor Car Co.....Detroit, Mich.
Kissel Motor Car Co.....Hartford, Wis.
Maxwell Motor Co., Inc.....Detroit, Mich.
Mitchell Motors Co., Inc.....Racine, Wis.
Nash Motors Co.....Kenosha, Wis.
National Motor Vehicle Co..Indianapolis, Ind.
Oakland Motor Car Co.....Pontiac, Mich.
Olds Motor Works.....Lansing, Mich.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co....Detroit, Mich.
Pierce-Arrow Motor Car Co....Buffalo, N. Y.
Pullman Motor Car Co.....York, Pa.
Reo Motor Car Co.....Lansing, Mich.
Saxon Motor Car Corp.....Detroit, Mich.
F. B. Stearns Co.....Cleveland, Ohio
Studebaker Corp. of America...Detroit, Mich.
Velie Motor-Vehicle Co.....Moline, Ill.
Winton Co.....Cleveland, Ohio

Second Floor Automobile Section

Abbott Corp.....Cleveland, Ohio
Anderson Elec. Car Co.....Detroit, Mich.
Apperson Bros. Auto Co.....Kokomo, Ind.
Auburn Automobile Co.....Auburn, Ind.
Baker, R. & L. Co.....Cleveland, Ohio
Briscoe Motor Corp.....Jackson, Mich.
J. I. Case, T. M. Co.....Racine, Wis.
Jas. Cunningham Son & Co..Rochester, N. Y.
Dort Motor Car Co.....Flint, Mich.
Empire Automobile Co.....Indianapolis, Ind.
Fiat Automobile Co.....Poughkeepsie, N. Y.
Inter-State Motor Car Co.....Muncie, Ind.
Jackson Automobile Co.....Jackson, Mich.
Lewis Spring & Axle Co.....Jackson, Mich.
Lexington-Howard Co.....Connersville, Ind.
Mercer Automobile Co.....Trenton, N. J.
Milburn Wagon Co.....Toledo, Ohio
Moon Motor Car Co.....St. Louis, Mo.
Moline Automobile Co.....E. Moline, Ill.
Mutual Motors Co.....Jackson, Mich.
Nordyke & Marmon Co., Inc.Indianapolis, Ind.
Ohio Elec. Car Co.....Toledo, Ohio
Pathfinder Co.....Indianapolis, Ind.
W. A. Paterson Co.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Premier Motor Corp.....Indianapolis, Ind.
Regal Motor Car Co.....Detroit, Mich.
Scripps-Booth Corp.....Detroit, Mich.
Stutz Motor Car Co. of Amer...Indianapolis
Westcott Motor Car Co.....Springfield, Ohio

Third Floor—Automobile and Accessory Section

Austin Automobile Co...Grand Rapids, Mich.
Ben Hur Motor Co.....Cleveland, Ohio
Bour-Davis Motor Car Co.....Detroit, Mich.
Columbia Motors Co.....Detroit, Mich.
Crow-Elkhart Motor Co.....Elkhart, Ind.
Crow Motor Car Co.....Elkhart, Ind.
Detroiter Motor Car Co.....Detroit, Mich.
Geo. W. Davis M. C. Co.....Richmond, Ind.
Drexel Motor Car Corp.....Chicago, Ill.
Elgin Motor Car Corp.....Chicago, Ill.
Enger Motor Car Co.....Cincinnati, Ohio
Hackett, Mansell, Hackett....Jackson, Mich.
Kline Car Corp.....Richmond, Va.
Liberty Motor Car Co.....Detroit, Mich.
H. A. Lozier Co.....Cleveland, Ohio
Lozier Motor Car Co.....Detroit, Mich.
McFarlan Motor Co.....Connersville, Ind.
Metz Co.....Waltham, Mass.
Monroe Motor Co.....Pontiac, Mich.
Standard Car Cons. Co.....Dover, Del.
Sterling Auto Mfg. Co., Inc..Bridgeport, Conn.
Sun Motor Car Co.....Elkhart, Ind.

Fourth Floor—Accessories and Motorcycles

American Motor Co.....Plainfield, N. J.
Barley Mfg. Co.....Streator, Ill.
Dey.
Dixie Motor Car Co.....Louisville, Ky.
General Engineering Co.....Detroit, Mich.
Emerson Motor Car Co....Long Island City
Harroun Motor Corp.....Detroit, Mich.
Jordan Motor Car Co.....Cleveland, Ohio

Among 98 Car Makers

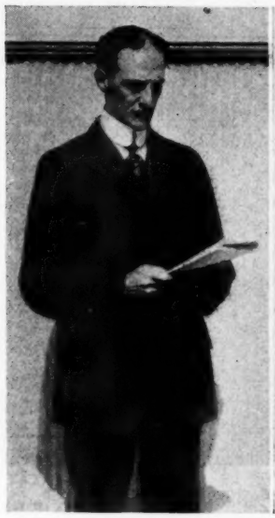
Last Year and Chicago Four—Five Electric Six at Chicago—Record Attendance

Several well-known cars will not exhibit at the national shows this year, among these being Locomobile and White. Such cars as the Monitor, Champion, Farmack, Gadabout, Trumbull, Lescina, Fergus, Remington, S. G. V. and S. J. R. will also be missed from the list of exhibitors. White and Locomobile will be on exhibition in January at the importers' salon at the Hotel Astor, this city. The coming shows, however, will be featured with a large number of new cars, which have never before been exhibited. These include at the New York show: Monroe, Columbia Electric, Detroiter, Liberty, Bour-Davis, Ben Hur, Elgin, Drexel, American, Princess, Dey, Kent, Doble, Jordan, Emerson, Harroun, Monitor, Dixie and Roamer. The Chicago show will list such new cars as Stephens, Emerson, Dixie, Classic, Harroun, Drexel, Pan-American, American, Ben Hur, Liberty, Columbia, Monroe and H. A. L.

Changes in Spaces Allotted

There will be several space changes this year at New York. Of course, Overland, Buick, Studebaker and Maxwell will retain last year's spaces. Others on the first floor this year are King, Stearns, Olds, Paige, Mitchell, Winton, Pullman, Pierce, National, Nash, Allen, Grant, Saxon, Hupp, Franklin, Chandler, Haynes, Reo, Packard, Oakland, Hudson, Chalmers, Cadillac, Kissel, Velie and Cole.

At Chicago, as at New York, Overland, Buick and Studebaker have retained last year's spaces on the Coliseum main floor. Other changes in placement of spaces have taken place. Maxwell has moved along the cross aisle, next to the Overland. Chevrolet has moved across the aisle in a similar position in the space nearest the entrance. Others on the main floor are Scripps-Booth, Apperson, National, Dort, Grant, Pullman, Paige, Haynes, Saxon, Chalmers, Reo, Packard, Oakland, Dodge, Franklin, Velie, Winton, Chandler, Pierce, Olds, Cadillac, King, Hudson, Nash, Hupp, Kissel, Briscoe, Allen, Case, Mitchell, Marmon, Auburn, Moon, Stutz, Inter-State, Cole, Stearns, Fiat, Mercer, Regal, Jackson and Empire.



W. C. Leland
Vice-pres., Cadillac Motor Car Co.

Hugh Chalmers
Pres., Chalmers Motor Co.

John N. Willys
Pres., Willys-Overland Co.

Charles Clifton
Treas., Pierce-Arrow Motor Car Co.

Space at the National Shows To Be Held at New York and Chicago

Kent Motor Corp.....New York
Monitor.
Princess Motor Car Co.....Detroit, Mich.

Car Exhibitors at Chicago

Coliseum Main Floor—Automobile Section

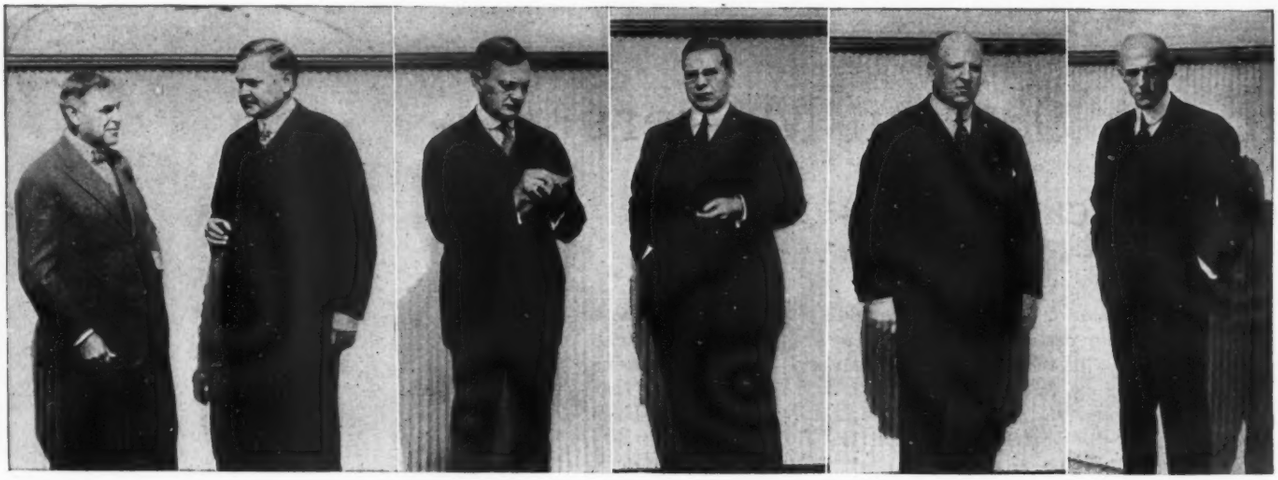
Allen Motor Co.....Fostoria, Ohio
Apperson Bros. Auto Co.....Kokomo, Ind.
Auburn Automobile Co.....Auburn, Ind.
Briscoe Motor Corp.....Jackson, Mich.
Buick Motor Co.....Flint, Mich.
Cole Motor Car Co.....Indianapolis, Ind.
Cadillac Motor Car Co.....Detroit, Mich.
Chalmers Motor Co.....Detroit, Mich.
Chandler Motor Car Co.....Cleveland, Ohio
Chevrolet Motor Co., of Mich....Flint, Mich.
J. I. Case, T. M. Co.....Racine, Wis.
Dort Motor Car Co.....Flint, Mich.
Empire Automobile Co....Indianapolis, Ind.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Grant Motor Car Corp.....Findlay, Ohio
Haynes Automobile Co.....Kokomo, Ind.
Hupp Motor Car Corp.....Detroit, Mich.
Fiat Automobile Co....Poughkeepsie, N. Y.
Inter-State Motor Co.....Muncie, Ind.
Jackson Automobile Co.....Jackson, Mich.
Hudson Motor Car Co.....Detroit, Mich.
Kissel Motor Car Co.....Hartford, Wis.
Maxwell Motor Co., Inc.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Moon Motor Car Co.....St. Louis, Mo.
Mitchell Motors Co., Inc.....Racine, Wis.
National Motor Vehicle Co.Indianapolis, Ind.
Nordyke & Marmon Co., Inc.Indianapolis, Ind.
Nash Motors Co.....Kenosha, Wis.
Oakland Motor Car Co.....Pontiac, Mich.
Olds Motor Works.....Lansing, Mich.
Pullman Motor Car Co.....York, Pa.
Pierce-Arrow Motor Car Co...Buffalo, N. Y.
Paige-Detroit Motor Car Co...Detroit, Mich.
Packard Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Regal Motor Car Co.....Detroit, Mich.
Scripps-Booth Corp.....Detroit, Mich.
Saxon Motor Car Corp.....Detroit, Mich.
F. B. Stearns Co.....Cleveland, Ohio
Stutz Motor Car Co., of America,
Indianapolis, Ind.
Studebaker Corp. of America..Detroit, Mich.
Velie Motor Vehicle Co.....Moline, Ill.
Winton Co.....Cleveland, Ohio

First Regiment Armory—Main Floor

Anderson Electric Car Co.....Detroit, Mich.
Abbott Corp.....Cleveland, Ohio
Austin Automobile Co..Grand Rapids, Mich.
Baker, R. & L. Co.....Cleveland, Ohio
Bartholomew Co.....Peoria, Ill.
Columbia Motors Co.....Detroit, Mich.
Jas. Cunningham Son & Co..Rochester, N. Y.
Crow-Elkhart Motor Co.....Elkhart, Ind.
Detroiter Motor Car Co.....Detroit, Mich.
Geo. W. Davis Carriage Co..Richmond, Ind.
Elkhart, C. & M. C. Co.....Elkhart, Ind.
Hackett-Mansell, Hackett....Jackson, Mich.
Lexington-Howard Co.....Connersville, Ind.
Lozier Motor Co.....Detroit, Mich.
Lewis Spring & Axle Co.....Jackson, Mich.
Monroe Motor Co.....Pontiac, Mich.
McFarlan Motor Co.....Connersville, Ind.
Moline Automobile Co.....E. Moline, Ill.
Milburn Electric Co.....Toledo, Ohio
Mutual Motors Co.....Jackson, Mich.
Metz Co. .....Waltham, Mass.
Pathfinder Co.....Indianapolis, Ind.
Peerless Motor Car Co.....Cleveland, Ohio
Premier Motor Corp.....Indianapolis
Ohio Electric Car Co.....Toledo, Ohio
W. A. Peterson Co.....Flint, Mich.
Standard Steel Car Co.....Pittsburgh, Pa.
Woods Motor Vehicle Co.....Chicago, Ill.

Coliseum Basement—Automobile Section

American Motor Co.....Plainfield, N. J.
Barley Mfg. Co.....Streator, Ill.
Ben Hur Motor Co.....Cleveland, Ohio
Classic Motor Car Corp.....Chicago, Ill.
Elgin Motor Car Corp.....Chicago, Ill.
Emerson Motor Car Co....Long Island City
Enger Motor Car Co.....Cincinnati, Ohio
Dixie Motor Car Co.....Louisville, Ky.
Drexel Motor Car Corp.....Chicago, Ill.
Harroun Motor Corp.....Detroit, Mich.
Jordan Motor Car Co.....Cleveland, Ohio
Liberty Motor Car Co.....Detroit, Mich.
Princess Motor Car Co.....Detroit, Mich.
Pan American Motors Corp.....Chicago, Ill.
Stephens Motor Branch of Moline Plow Co. .....Freeport, Ill.
Sun Motor Car Co.....Elkhart, Ind.



Horace De Lisser — Vice-Pres. Briscoe Motor Corp.

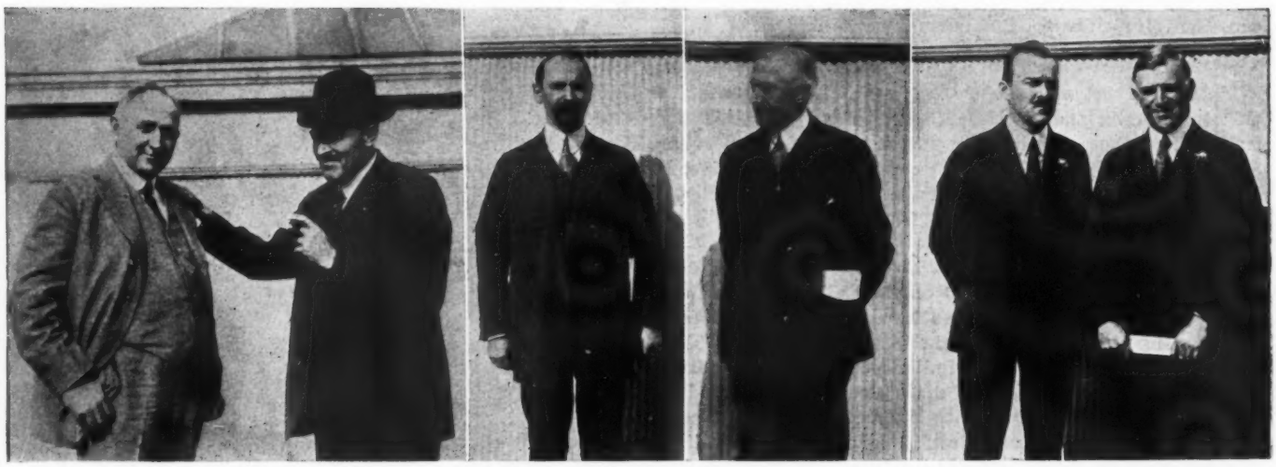
Benjamin Briscoe — Pres. Briscoe Motor Corp.

R. C. Rueschaw — Sales Mgr. Reo Motor Car Co.

J. W. Bate — Chief Engr. Mitchell Motors Co.

W. C. Sills — Sales Mgr. Chevrolet Motor Co. of N. Y.

O. C. Hutchinson — Mgr. Wholesale Br'ch Hupp Motor Car Corp.



J. I. Handley — Pres. Mutual Motors Co.

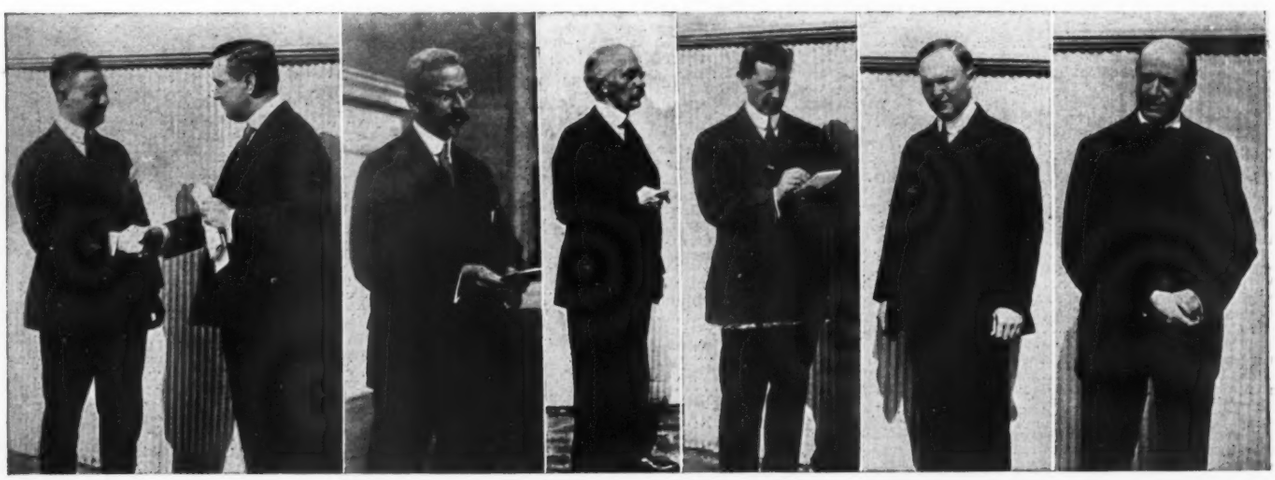
B. W. Twyman — Gen. Mgr. Inter-State Motor Co.

W. R. Vogeler — Export Mgr. King Motor Car Co.

Henry Larson — N. Y. Distributer Olds Motor Works

E. C. J. McShane — Mercer Automobile Co.

Wm. T. White — Pres. Mercer Automobile Co.



T. S. Johnston — Rep. Monroe Motor Co.

Norris Mason — N. Y. Distributer Monroe Motor Co.

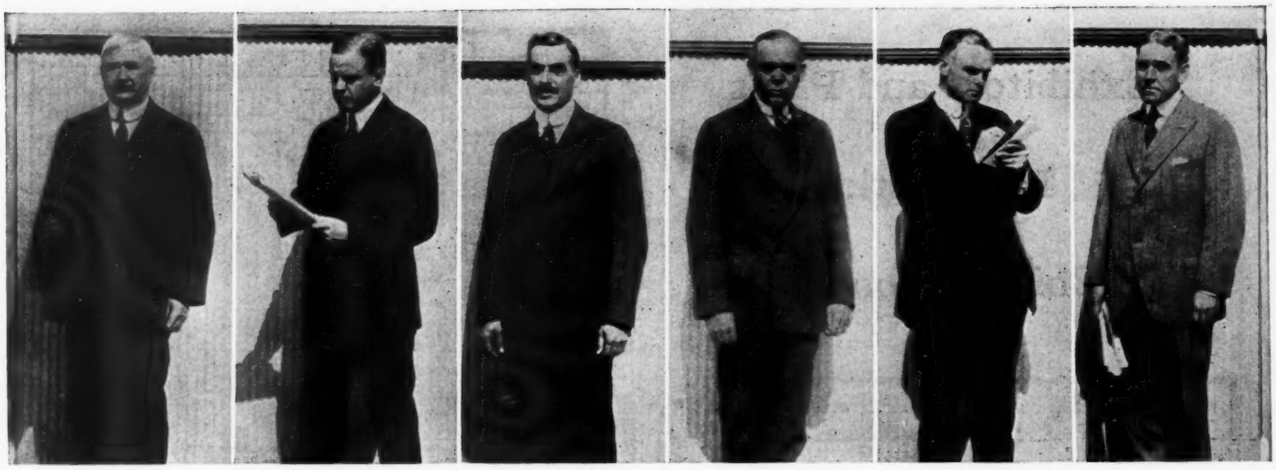
M. I. Brock — Dir. of Sales Am. Motors Corp.

W. B. Pratt — Pres. Elkhart C. & M. Car Co.

Walter S. Austin — Pres. Austin Automobile Co.

W.H.Van Dervoort — Pres. Moline Automobile Co.

J. G. Monihan — Pres. Harroun Motor Corp.



Elwood Haynes
Pres. Haynes Automobile Co.

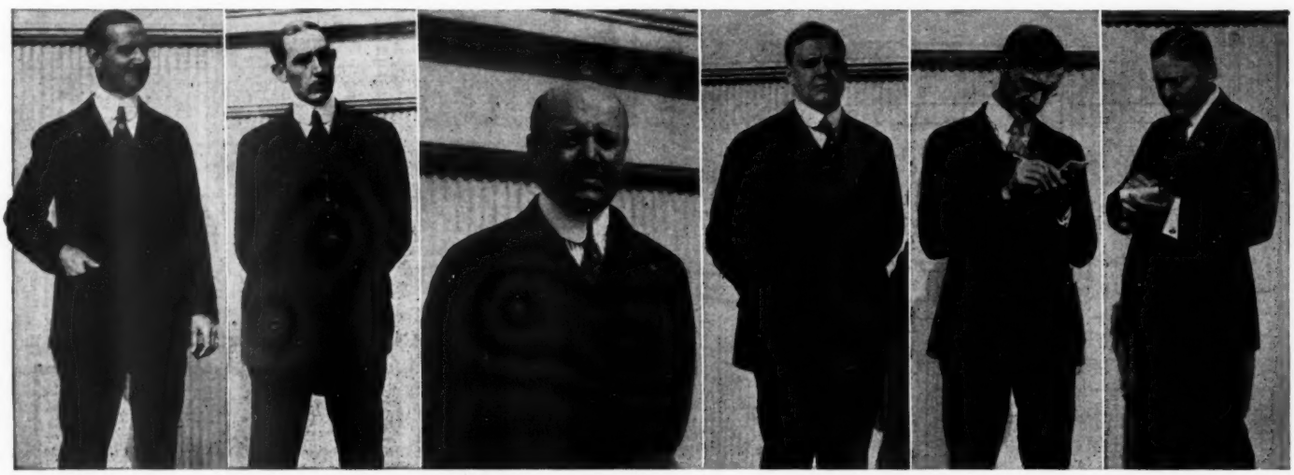
Percy Owen
Pres. Liberty Motor Car Co.

W. E. Metzger
Vice-Pres. Columbia Motors Co.

J. J. Cole
Pres. Cole Motor Car Co.

H. H. Hills
Sales Mgr. Packard Motor Car Co.

H. H. Rice
President Waverley Co.



Alfred Reeves
General Manager N. A. C. C.

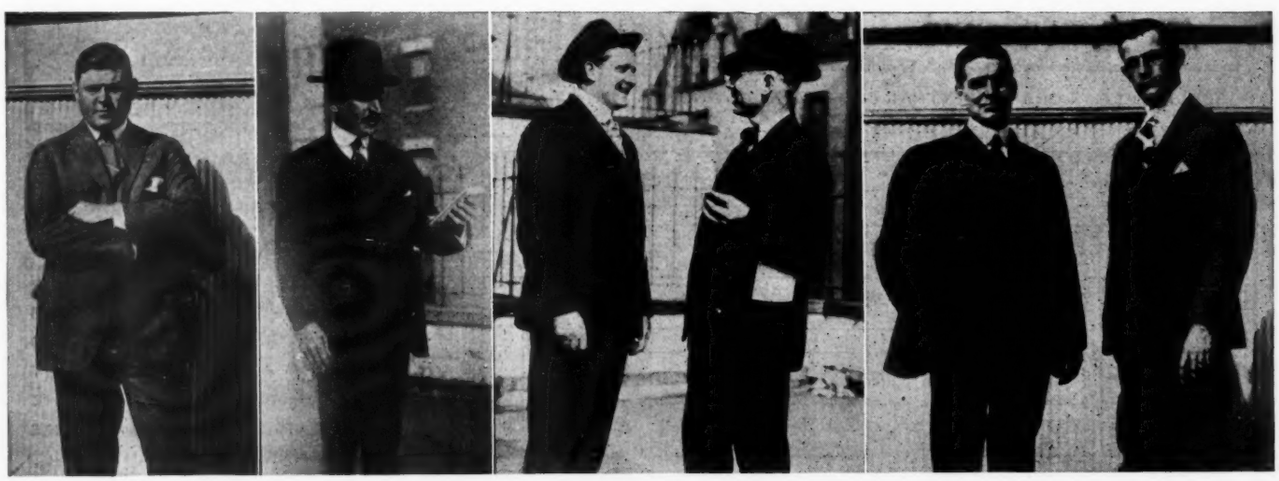
G. M. Dickson
Sec. & Treas. Nat'l Motor Vehicle Co.

F. E. Moskovics
Com. Mgr. Nordyke & Marmon Co., Inc.

A. E. Schaaf
Sec. Fiat Automobile Co.

W. B. Stout
Sales Mgr. Scripps-Booth Corp.

W. E. Stalnaker
Sales Mgr. Pathfinder Co.



C. A. Baird
Sales Mgr. Jas. Cunningham Son & Co.

F. H. Clarke
Pres. Kent Motors Corp. of N. Y.

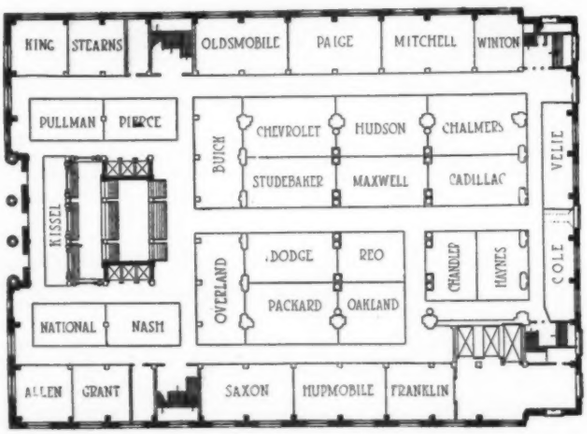
Winfield Graham
Supervisor of Sales, McFarlan Motor Co.

B. M. Barrows
Sales Mgr. McFarlan Motor Co.

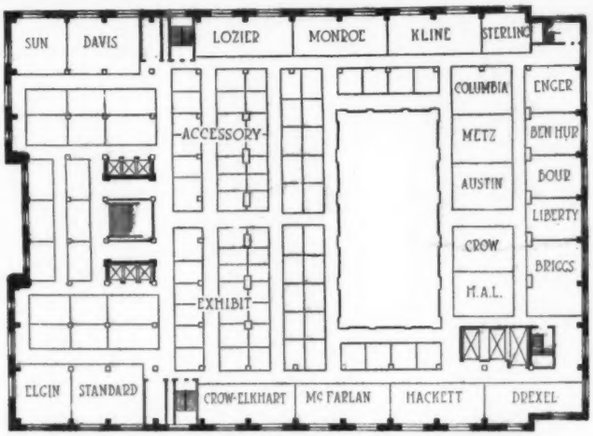
R. A. Pickens
Sales Manager Metz Co.

F. H. Oliver
Sales Mgr. Princess Motor Car Co.

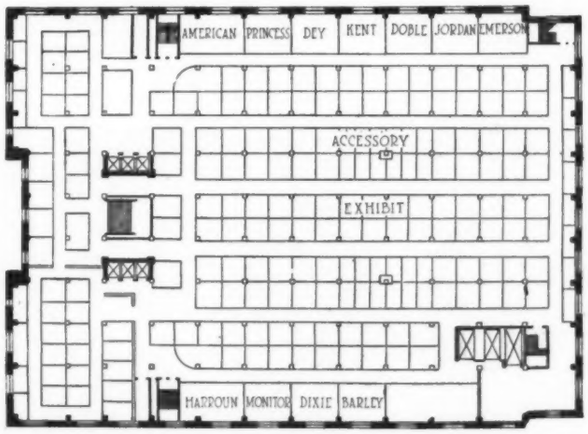
Exhibitors and Plans of New York and Chicago Shows



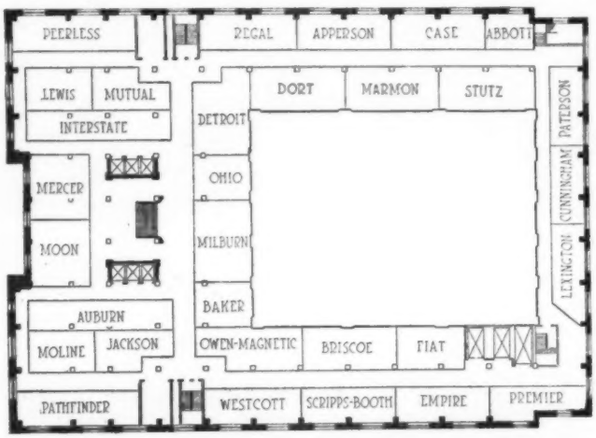
MAIN FLOOR GRAND CENTRAL PALACE, NEW YORK



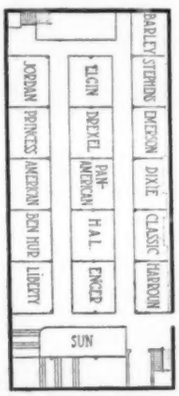
THIRD FLOOR GRAND CENTRAL PALACE, NEW YORK

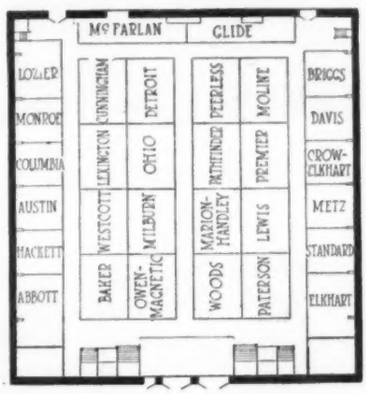


FOURTH FLOOR GRAND CENTRAL PALACE, NEW YORK

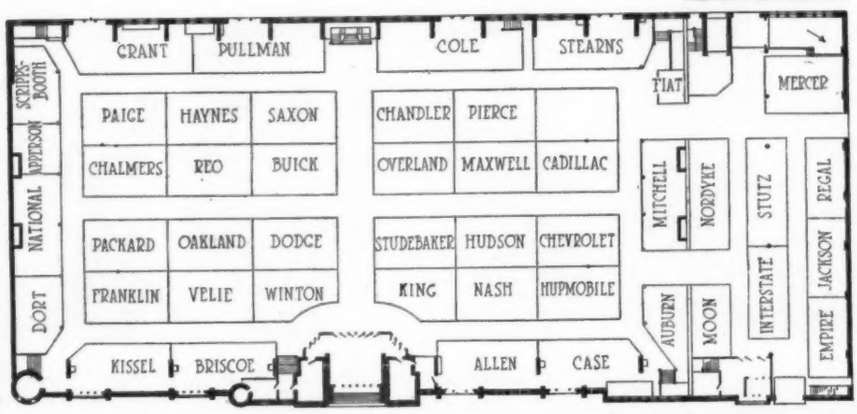


SECOND FLOOR GRAND CENTRAL PALACE, NEW YORK





FIRST FLOOR OF THE FIRST REGIMENT ARMORY, CHICAGO



AT THE LEFT IS THE MAIN FLOOR OF THE COLISEUM AT CHICAGO WITH ITS ANNEX AT THE RIGHT SIDE. IMMEDIATELY ABOVE THE ANNEX IS THE PLAN OF THE ANNEX BASEMENT

Gravity Does Not Mean Power

Bureau of Mines Head Reports That Experiments Show Less Than 2 Per Cent Difference in Power Between 74 and 60-Deg. Gasoline

GRAVITY does not of itself furnish a satisfactory basis for buying gasoline, Van. H. Manning, director of the Bureau of Mines, told the Retail Merchants' Assn. of Washington, D. C., in an address delivered Oct. 4. The association has launched a campaign for purity in gasoline and Mr. Manning's report that tests made by his department showed a difference in power of less than 2 per cent between gasoline of 74-deg., and 60-deg. gravity prefaced his statement to the effect that, under proper engine conditions, power is not a matter of the gasoline used. Mr. Manning pointed out how the co-operation of automobile engineers has made the use of lower grade fuels practicable in the cars of to-day and then explained how the end point of gasoline had been increased by the refiners' use of heavier oils from 150 deg. Centigrade a year ago to 175 and 200 deg. Centigrade at the present time.

While our present gasoline supply is sufficient for only 27 to 30 years, without taking into consideration the probable yearly increase in the demand, Mr. Manning states that the remarkable development of the casing head gasoline industry during the past year gives promise that the coming years will bring into existence new methods of producing, increasing or utilizing the gasoline output so that the problems of the automobile fuel situation will be gradually worked out to a satisfactory solution. Mr. Manning's address follows:

"The Bureau of Mines is in entire sympathy with the campaign for purity in gasoline, and wishes to be of aid to the entire country in this important matter.

"We are to-day facing a serious condition in the petroleum industry. We have probably reached the summit of our crude oil production in this country. According to the United States Geological Survey, our future supply of petroleum is only sufficient to last us from 27 to 30 years at the present rate of consumption. This does not take into consideration any increasing demand as the years go by. In order to supply the fuel for the future automobiles, it will be necessary to make better use of our crude oil production in the future than we have in the past.

Production Is Inadequate

"In discussing the various problems involved, we must bear in mind that while the demand is steadily increasing, the production of crude oil, which is the raw source of the gasoline, is remaining approximately stationary, if it has not been declining in the past year. A year ago gasoline was selling at 11 cents a gallon and was a drug on the market, due to the tremendous production of gasoline-rich crude produced by the Cushing field in Oklahoma. This production, however, has declined from over 300,000 barrels of crude oil per day to less than 60,000 barrels per day.

"The Cushing crude contains from 25 to 30 per cent of gasoline. The new production which has compensated for the decline in the Cushing production, contains but from 15 to 17 per cent of gasoline. Notwithstanding the decline in the production of gasoline, the demand has steadily increased, due primarily to the increased use of the automobile. On Jan. 1, 1916, there were two and a quarter million automobiles in use in the United States. It is estimated by the automobile manufacturers that there will be in excess of 3,250,000 in use by January, 1917, and by January, 1918, there will be in excess of 4,500,000 automobiles in use. These figures are in addition to the increased use of motor trucks, farm tractors, stationary gasoline engines, motor boats, etc.

Automobile Engineers Help

"This increasing demand for gasoline has been met partly by the automobile engineers and refiners. The automobile engineers have improved their automobile engines and carbureters, making it possible to use heavier fuels in the automobile of to-day, which would have been impracticable a year or 2 years ago. The refiners, taking advantage of the work of the automobile engineers, have been able to use heavier oils for gasoline, thereby increasing the percentage of gasoline obtainable from the given amount of crude oil. This has resulted in increasing the end point from 150 deg. C., the end point of a year ago, up to an end point of 175 deg. to 200 deg. C., the end point of to-day.

"The end point is a term used in distillation of gasoline and is usually considered to be the temperature at which 95 per cent of the gasoline will distill off if distilled in a proper flask at the proper rate. Recently the Bureau of Mines purchased four samples of gasoline sold in the District of Columbia. These gasolines were analyzed and the end point determined in each instance. The gravity of one was 64.8. The gravities of the other three samples ranged from 61.5 to 62. The end point of the first sample was 210 deg. C. The end point of the other three samples was 175 deg. The high end point of the first sample, together with its high specific gravity indicates that this is a blended gasoline. This is further borne out by the analysis, which indicates that 21 per cent is distilled over under 75 deg., whereas less than 10 per cent on the other three samples is distilled over at this same temperature. This larger proportion of light products, which is responsible for the high gravity, indicates that casing head gasoline has been blended with heavy distillate, because the end point of this gasoline is 210 deg., as against 175 deg. for the other three gasolines analyzed. It is possible that this blended gasoline might prove satisfactory in some automobile engines.

"The end point is important because it is a measure of the readiness of the gasoline to vaporize, which is necessary and desirable information to have in selecting suitable fuel for gasoline engines. As a result, the refiners have been able to supply a lower grade fuel, which is now adaptable to the improved automobile engine. This, of course, automatically has a tendency to keep the price of gasoline down, as it can readily be seen that if the standard of quality is higher, the supply would be more limited and higher in price.

Old Cars Suffer

"This will probably explain some of the difficulties that the people are having with the character of the fuel used in their automobiles at the present time, particularly if the automobile is of a design of 2 or more years ago, not having the improved engine and carbureter design, it is not equipped to use the present-day low grade of fuel.

"Refiners are co-operating along another line to the same end, namely, to increase the amount of gasoline and at the same time to keep the price down to a reasonable basis, by

means of cracking kerosenes and heavier oils, thereby converting a certain proportion of the crude oil which was not formerly utilized for that purpose into gasoline. Last year there was produced by cracking processes approximately 2,000,000 bbls. of gasoline. This year it is estimated that there will be produced more than 5,000,000 bbls. of gasoline by cracking processes. This is all the more striking when it is considered that these 5,000,000 barrels of gasoline were made from oils which in the past did not enter into the making of gasoline, and indicates the possibilities of the present production of crude oil to supply the future requirements of the automobile.

"These are some of the problems that have to be taken into consideration in any specifications that are drawn up. We want to be sure as nearly as we can that we get a grade of gasoline that will be satisfactory for our needs; then we have to be sure that it is of such a grade that can be supplied by the refiners at a reasonable price. Unless the specifications do take these factors into consideration, they may result in restricting the supply and making the prices exorbitantly high, and also may deprive many people of the pleasure of owning an automobile by making the price of fuel prohibitive. With proper development of the cracking processes, and the co-operation of the automobile engineer, there is no reason why a suitable fuel should not be available for years to come and at a reasonable price.

Future Not Threatening

"The Bureau of Mines has for a number of years appreciated the seriousness of the motor fuel problem; in fact, long before the sharp increase in prices of gasoline, this bureau was aware of the conditions, and realized that this increase in prices would follow. It was at that time the bureau began a serious investigation of this entire problem. The special investigation bearing directly on the quality of gasoline was begun 8 months ago and is being continued to-day. Samples of gasoline were purchased in the open market in all parts of the country (and not from refiners), and were analyzed by the bureau's engineers, and engine tests were also run on the representative grades of gasoline. The results to date are contained in a publication to be issued in the near future by the Bureau of Mines. There is also in course of publication, and nearly completed, a report on gasoline specifications, which has taken into consideration the available supply, increasing demand and the protection of the public, as well as fair treatment to the refining industry—all with the purpose of assuring a future supply of gasoline to the public at the most reasonable prices.

Gravity Does Not Determine Power

"One of the results that may prove startling to the public is that the gravity of the gasoline does not of itself necessarily mean a satisfactory basis for the purchase of gasoline. Engine tests were run by the bureau on gasoline having a gravity of from 74 deg. to 60 deg. The net result of these tests showed a difference in power developed of less than 2 per cent between gasolines of 74 deg. gravity and gasolines of 60 deg. gravity. This is all the more remarkable when it is considered that 74 gravity gasoline is selling at 31 cents per gallon, while the 60 deg. gravity gasoline can be purchased at 22 cents per gallon.

"It is probable that the 60 gravity gasoline, which can be purchased for 9 cents less a gallon, can be used in the automobile with the same satisfaction as the 74 deg. gravity gasoline.

"All gasolines can, under properly regulated engine conditions, be made to develop quantities of power which are not greatly different. This result was obtained from experimental work in our laboratories in Pittsburgh, and indicates that the claim made by many refineries for the power-producing qualities of their gasoline are largely without foundation. It does not necessarily follow that all gasolines are equally good, but it is certain that exaggerated claims are made for the number of miles per gallon. The possible element of superiority undoubtedly lies in the quality some products have of giving maximum efficiency over a wider range of engine conditions. The fact of importance is, therefore, that if the user of gasoline takes sufficient care of his engine, he can obtain almost as good results from a cheap gasoline as from an expensive, high-test product, as the power developed under like conditions varies in our experiments.

Casing-Head Gasoline

"Recently, owing to the remarkable development of the casing-head gasoline industry, that is, obtaining gasoline from natural gas, there has been obtained a product called 'blended' gasoline. The casing-head gasoline as derived from natural gas is too volatile to be used directly. It is therefore mixed with oil just a little lighter than kerosene but heavier than gasoline. Such a blended gasoline may be of any gravity desired by the manufacturer, but is naturally different in composition and properties from the straight refinery product which it may chance to resemble in gravity only. This is due to the fact that it is generally composed of more of both of the heavier and lighter oils than gasoline made by the ordinary processes. On account of the larger proportion of light oil, it is possible to use a correspondingly large proportion of heavy oil and still have an average gravity the same as ordinary gasoline, but which may act very differently in an engine on account of the large portion of heavy oil contained in the blended product.

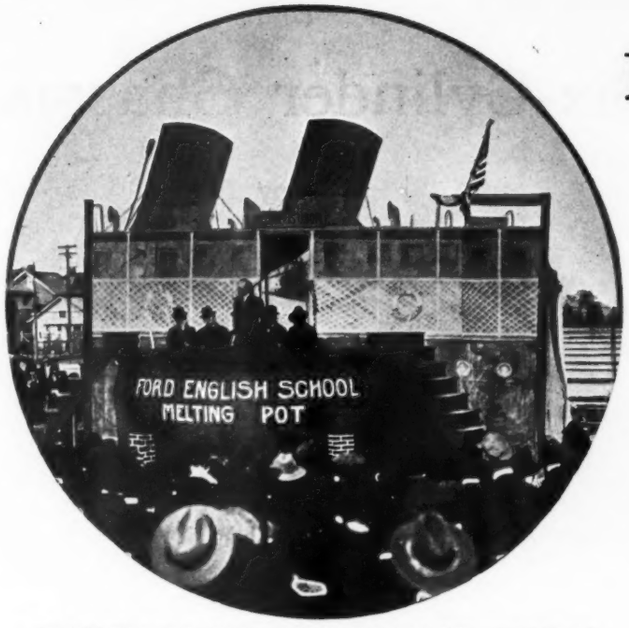
"This is not intended to discourage the use or manufacture of casing-head gasoline. If the casing-head gasoline is blended with the proper oils, that is, oils that are not too heavy, it can be used satisfactorily in an automobile engine. Casing-head gasoline is an important addition to our fuel oil resources, the production amounting to approximately 5 per cent of the total production of gasoline this year.

Preparing Gasoline Specifications

"The Bureau of Mines is now preparing gasoline specifications for the General Supply Committee of the Federal Government, which will undoubtedly be of interest to all users of gasoline. These specifications should be issued within the next 90 days.

"The Bureau of Mines has a complete testing laboratory, equipped with engines and other necessary apparatus, with which it will be possible to make power tests on gasoline, as well as on other internal combustion engine fuels. The results of these tests will be available to the general public, and will be of the utmost importance in clearing up the difficulties with which it is confronted to-day.

"In conclusion, I wish to emphasize the necessity of bearing in mind the following consideration in our efforts to obtain purity in gasoline. We must keep before us the fact that there should be the greatest possible use of the raw materials consistent with economic results. For instance, no specifications should be drawn up which would exclude certain materials now being used satisfactorily, for if eliminated, this would correspondingly restrict the supply and automatically increase the price. This of course, is not desirable. The bureau is exceedingly anxious that all the available resources for the making of gasoline be used to their greatest extent, and it is also interested in the encouragement of further economy in the design of the automobile engine. Any specifications that would restrict the use of some of the low grade oil resources would at once stop any further efforts toward improvement in engine design. At the same time, the bureau is interested in seeing that the public obtains a satisfactory fuel."



Ford Melting Pot, where graduates received diplomas on Oct. 1

Ford's Melting Pot

Company's English School Cuts Accidents 54% — Eliminates Interpreters

WHEN the Ford English School, commonly known as the Ford Melting Pot, graduated 250 of its pupils on Oct. 1, it marked the third graduation class since the opening of the school in 1914 and witnessed the disappearance of interpreters with a decrease of 54 per cent in the number of accidents in the production department.

Beginning with twenty pupils and one teacher, the school, has grown until it includes 2720 members with 163 instructors.

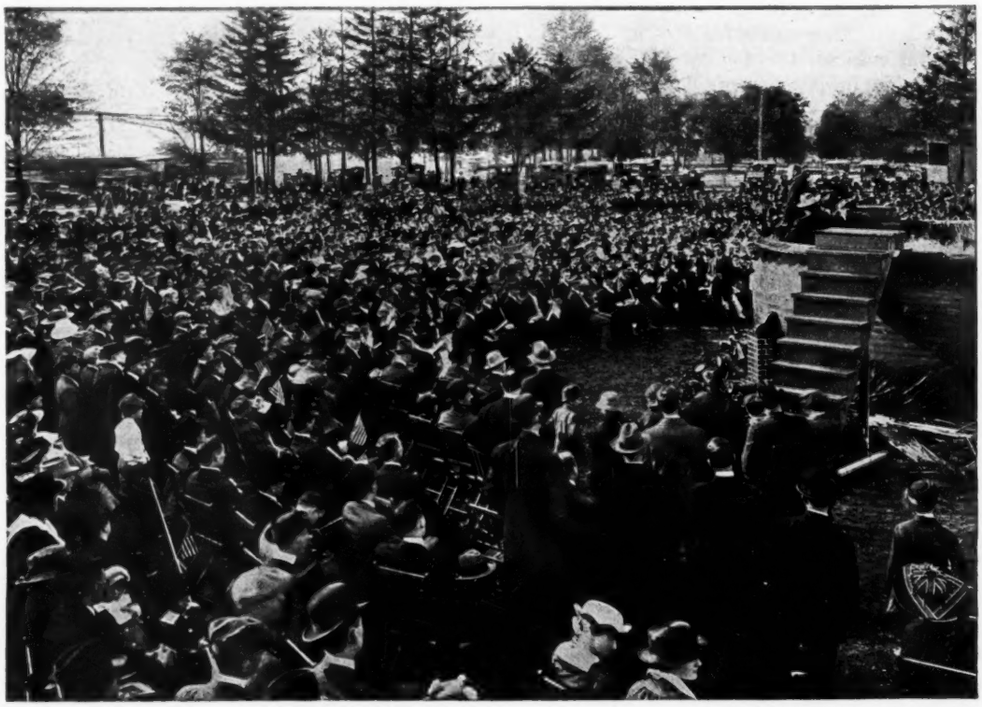
The instructors are all employees of the factory, composed of foremen, machine operators, clerks and workmen who, voluntarily and without compensation, give their spare time to this work. Lessons are similar to the Berlitz system.

Many types come to the classes. There is the type which has a good education in his native tongue but knows no English; and the type that has a fair education in the mother-tongue and knows a few disconnected English words, usually slang. Then there is the group which possesses little if any education, either native or English. The first and second classes progress rapidly. Some of the men are able to read, write and speak English with a fair degree of correctness at the end of 3 months, though the average time for completing the course has been found to require 6 months. One class, set aside by itself, is very slow, completing but ten lessons in 10 months.

The usual class program consists of 45 min. in the morning and 1½ hr. in the afternoon so arranged because the men work in three shifts of 8 hr. each. The course consists of sixty-eight lessons taught in 34 weeks and includes 25 min. of oral training, 10 min. of reading exercises, 15 min. of writing lesson and 15 min. of review in each lesson. The first thing a man is taught to say is, "I am a good American," and a few minutes is devoted each day toward teaching the classes a few lines of the song "America." Attendance to the school is compulsory and men who refuse to attend are threatened by a short layoff. While the compulsion seems harsh to some, the Ford company believes that the end justifies the means and it is actually making more efficient, intelligent and valuable workmen by the plan already outlined.

The Ford Company also gives two other courses of study for its employees. They are the student course and the tool-making course. The latter includes a 2 years' study and was established to meet the scarcity of skilled mechanics. The members of the classes are required to have a previous knowledge of higher mathematics.

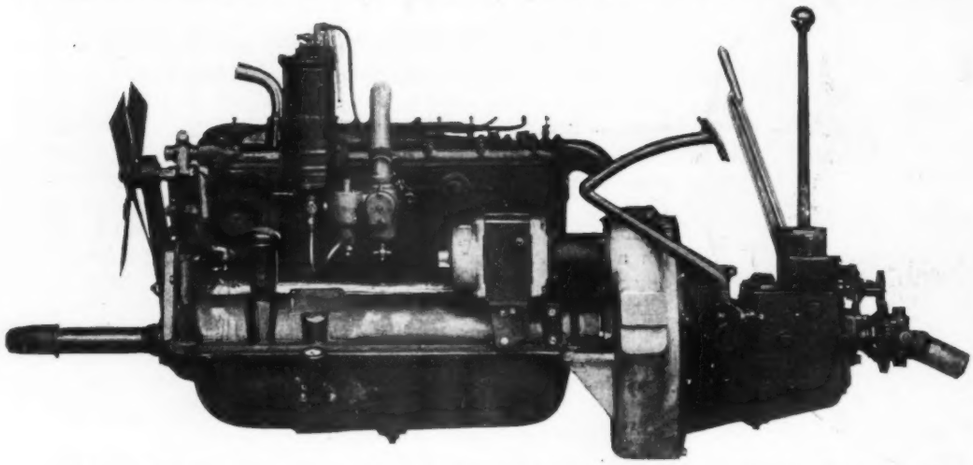
The student course qualifies employees for salesmanship and mechanical work. The more intelligent men only are selected and are thus built for the higher positions. They attend the school for a year and are constantly shifted from one department to another in the factory and offices and can later be used for branch managers or department heads. The company also places fifty Indians from the Carlisle College in this class every year. The college offers the Ford opportunity to its students who regard it as an incentive and strive to be among the fifty. Dean Marquis states that the Indians are among the best workmen in the institution.



Ford English school pupils and graduating class, athered around the Melting Pot on graduation day, Oct. 1, listening to an address by Dr. M. F. Rice

Lexington in Two Six-Cylinder Chassis

Many Body Styles for Minute Man and Thoroughbred—Multiple Exhaust Continued



Six-cylinder Continental power plant used in the new Lexington sixes, showing high mounting of carbureter with Stewart vacuum fuel feed tank. Starter mounting is also shown. Note gear for speedometer drive in rear of three-speed gearbox and adjustment for pedal on lower end

THE aim of the maker of the Lexington Sixes, the Lexington-Howard Co., Connersville, Ind., is to produce cars of high finish and excellent detail equipment. The chassis are made up of well known units, but it is the manufacturer's claim that the design has an unusual coherence for an assembly proposition, the reason being that several of the parts factories whence the Lexington company obtains its supplies are owned and operated by the same business heads.

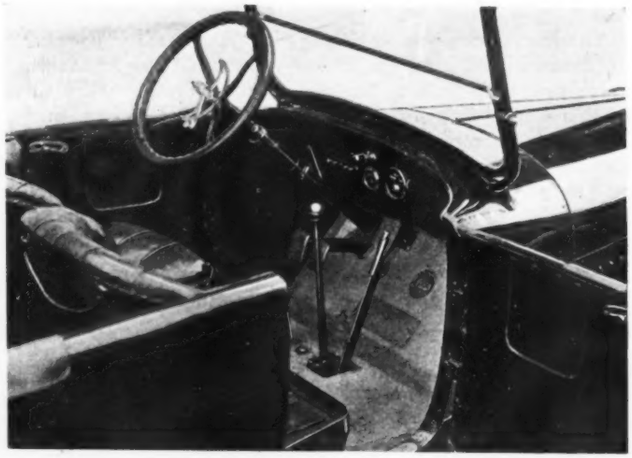
Two Chassis—Many Bodies

There are two different chassis, on which a fairly wide range of body styles are mounted. The smaller is known as the Minute Man six and sells for $1,185 and the larger is termed the Thoroughbred, costing $2,875. Both have Continental engines, the smaller 3¼ by 4½ in. and the larger 4⅛ by 5¼ in. but there is a special feature on these motors for which it is claimed that it gives a large increase in the power. This is the Moore multiple exhaust manifold, used in conjunction with two mufflers as may be seen in the chassis plan view. Briefly, this Moore system consists of an exhaust manifold so divided that the exhaust from one cylinder has no possibility of interference with that of the next. On the contrary, the escaping charge from one cylinder is believed to exercise some suction on the next. In six-cylinder engines where there is always one exhaust valve open and two open together at very frequent intervals interference most certainly does take place with the conventional exhaust system and it is a remarkable thing that the Moore system or some other device with a similar aim is practically never used except on the Lexington and one or two foreign cars.

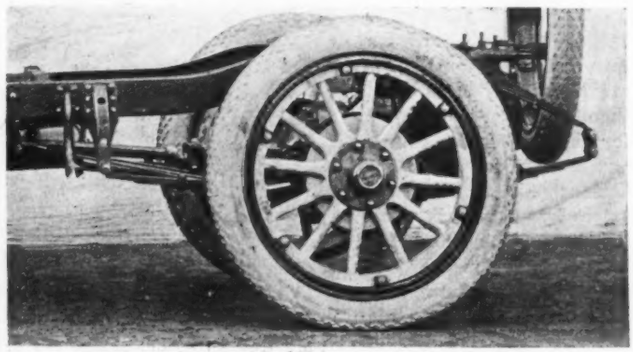
In other respects the engines are typical Continental products. The two sizes differ a little in detail, but not very much, both being pump cooled. Lexington equips the larger with two separate ignition systems and twelve spark plugs, the smaller having only one distributer, but this is built into the engine and is not a part of the generator. The electric generator is located on the water pump side of the engine, and is driven by a quick detachable coupling specially designed to give soundless operation.

Force-Feed Oiling to Bearings

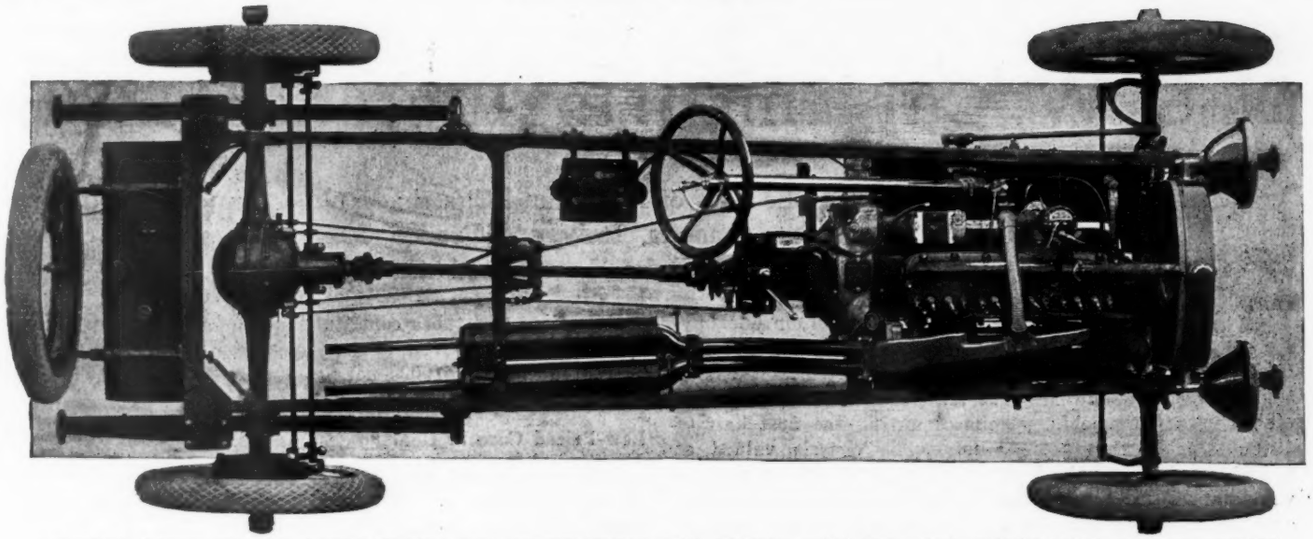
Each of the three main bearings of either engine gets its supply of oil forced direct from the pump, dip troughs being filled by the same pump for supplying the connecting-rod bearings and other parts of the motor by splash. The carbureters are mounted high, with gas passages as short as possible between throttle and cylinder, the fuel being fed by vacuum system in conjunction with a 22-gal. tank at the rear end of the main frame. Care has been taken to provide indicators so that the driver can see at a glance how his engine accessories are operating. Thus the oil system is provided with a large pressure gage which is set in the cowlboard, and the electrical outfit includes a cowlboard ammeter showing whether the battery is being charged or not, and also measuring the discharge rate when the battery is used with the car standing and engine stopped.



Driver's compartment of new Lexington, showing divided front seats, ample leg-room and control members



Rear of chassis, showing drop of forward spring end



Lexington Minute Man six chassis, showing dual exhaust system with separate outlet from each cylinder block and two mufflers. This view also shows carbureter hot air intake, storage battery mounting, rear fuel tank and spare tire carrier

Each of the two cars has a three-speed transmission but it should be noticed that the more powerful car has a substantially heavier gearbox with wider gears of bigger pitch, in proper proportion to the higher engine power. The clutches are different, as the Minute Man has a multiple dry disk pattern and the Thoroughbred a special cone clutch of Lexington design which has the leather face hand ground to a fine surface that fits accurately in the flywheel. The leather has twelve spring inserts beneath the face.

Torque and drive stresses are taken care of by the three-quarter elliptical rear springs, the propeller shafts being fitted with universals at both ends. Extra large diameter tubes are used for the propeller shafts to guard against whipping when running fast. The rear springs are 50 in. long and underhung beneath the axle, vanadium steel being used throughout for spring work.

Frame Is Unusually Rigid

Another place where exceptional material is employed is in the frame and the manufacturer makes a special point of drilling the holes in the side rails and applying the rivets so that a particularly good job is made of the frame altogether. All the different brackets are hot-riveted, and at several points Lexington uses more rivets for a particular piece than is the conventional practice this, of course, assisting rigidity and preventing the production of creaks. The front and rear axles are conventional in type except that the former is carefully set to a give a caster action to the steering. Final drive is, of course by spiral bevel.

On the smaller chassis four body styles are available. The five-passenger open touring car which costs $1,185 is finished in dark green, with wheels in cream color and chassis, with fenders, black. The top and side curtains are black leatherette, and the top boot of the same material. The top clips to the windshield, which is set with a slight rake. The equipment is more than usually complete for it includes a tire pump with accurate gage, a trouble lamp, double-bulb headlamps and motor-driven electric horn as well as tire carrier and rim license brackets, etc.

A Convertible Touring Model

Alternative bodies on this chassis include a convertible type touring car from which the windows can be detached individually. This body has been worked out so that the top really fits the body beneath, the lines harmonizing as they do in a fully enclosed body. The color scheme is the same as for the open touring car and the equipment also. This convertible sells for $1,350.

There is an open roadster and a convertible roadster, following the scheme of the five-passenger cars, the former costing $1,185 and the latter $1,350, just as the touring car. The equipment is identical except that the roadsters are finished in a deep wine color instead of the dark green. All these bodies mount on the same 116-in. wheelbase chassis and wood wheels with 32 by 4-in. tires, non-skid rear, are standard.

Clubster with Small Tonneau

On the larger car there are two standard bodies, a seven-passenger touring and a four-passenger close coupled design called the clubster. The clubster is not a clover-leaf, but is a small tonneau job with only two doors, these opening into the rear compartment. The driver and front passenger reach their seats by stepping forward in the aisle. There is a very roomy cupboard in the rear end of this body which provides ample room for tools, inner tubes, etc. The spare tire at the rear acts as a frame for the door to this cupboard so that it is readily accessible at all times.

The seven-passenger also has divided front seats. The wheelbases differ, the touring car being 144 in. and the clubster 130 in. Both have five 36 by 4½-in. cord tires included in their equipment and both cars are finished in almost any color at customer's option this extending to the upholstery even. The touring car costs $2,875 and the clubster $2,675, inclusive of everything.

Lexington Minute Man six-cylinder five-passenger selling at $1,185 with full equipment. Note divided front seats and Boyce Moto-Meter

N. S. W. Car Imports Increase 138%

United States Ships Over One-Half of Bodies and Chassis—Rubber Imports Increase Over 300 Per Cent—Canada, Italy and France Gain — Country Is Prosperous But War Taxes Make Low-Priced Cars Most Popular

SYDNEY, AUSTRALIA, Sept. 15—The automobile buying power of New South Wales, Australia, has not been lowered, despite the war. This state, which is one of the leading commonwealths of Australia, made a large increase in its automobile purchases during the first half of 1916. During that period, automobile chassis valued at $1,757,140, bodies valued at $454,230, and rubber articles valued at $1,676,100 were imported. The value of the chassis and bodies alone increased 138 per cent while that of the rubber articles including automobile tires and tubes, increased over 300 per cent.

United States Leads

That the United States has established a good foothold in its automobile trade in that state is indicated by the importation of $1,513,055 worth of American bodies and chassis during the first 6 months of 1916, or over one-half of the total automobile imports.

The United States also came to the fore during the first part of 1916 as a shipper of rubber goods, of which automobile tires and tubes constituted one of the leading items. Rubber exports to New South Wales from the United States increased nearly 1000 per cent, or from $132,585 to $1,302,530.

Low-Priced Cars in Demand

Despite the fact that body building in Australia is an important industry, this state increased its body imports nearly 300 per cent during the first half of 1916. The United States also led all other countries, its shipments totaling $357,100 out of a total importation of $454,230 in bodies. This is probably due to the scarcity of labor in the factories on account of the war.

New South Wales has been a market for low-price automobiles, especially in the country districts. With this class of population purchasing practically 80 per cent of the cars, it is not surprising that the low-priced and medium-priced types should lead.

The demand for high-priced cars is small because of the high taxation on individuals. Added to general taxes that have

Comparative Return Showing the Imports of Automobile Chassis, Bodies and Rubber Articles, into the State of New South Wales, for the First 6 Months of 1915 and 1916 Respectively.

1915

CHASSIS

Country Whence Imported	Value	Country of Origin	Value
United Kingdom	$297,675	United Kingdom	$252,670
Canada	171,020	Canada	89,945
New Zealand	9,820	Belgium	18,705
Fiji	3,610	France	29,190
Belgium	2,840	Germany	7,140
France	4,470	Italy	72,665
Germany	2,445	U. S. A.	289,555
Italy	64,855		
India	455		
New Caledonia	10		
U. S. A.	202,670		
Total	$759,870	Total	$759,870

BODIES

United Kingdom	$51,075	United Kingdom	$52,065
Canada	46,630	Commonwealth	330
New Zealand	2,145	Canada	23,095
Belgium	875	France	1,510
Fiji	1,005	Germany	1,280
Germany	205	Italy	4,945
Italy	4,945	U. S. A.	84,455
India	330		
U. S. A.	60,175		
Total	$167,680	Total	$167,680

RUBBER ARTICLES

United Kingdom	$183,850	United Kingdom	$164,945
Canada	39,135	Commonwealth	85
Hong Kong	15	Canada	23,640
India	55	Austria	25
New Zealand	2,860	Belgium	25
Belgium	115	France	8,505
Fiji	530	Germany	2,445
France	155	Italy	12,385
Germany	200	Japan	85
Italy	5,030	Denmark	165
Japan	100	Russia	240
New Caledonia	60	Sweden	40
Philippine Islands	15	U. S. A.	132,585
Sweden	40		
U. S. A.	113,010		
Total	$345,170	Total	$345,170

1916

CHASSIS

Country Whence Imported	Value	Country of Origin	Value
United Kingdom	$204,470	United Kingdom	$140,910
Canada	216,045	Canada	273,775
New Zealand	11,270	Belgium	1,400
France	2,695	France	66,715
Germany	820	Germany	820
Italy	96,000	Italy	112,860
Java	20,110	Sweden	340
U. S. A.	1,205,730	Switzerland	4,360
		U. S. A.	1,155,955
Total	$1,757,140	Total	$1,757,140

BODIES

United Kingdom	$28,135	United Kingdom	$17,220
Canada	69,315	Commonwealth	165
New Zealand	6,340	Canada	61,735
Germany	190	Belgium	450
Italy	6,220	France	9,305
Java	230	Germany	195
U. S. A.	343,785	Italy	6,560
		U. S. A.	357,100
Total	$454,230	Total	$454,230

RUBBER ARTICLES

United Kingdom	$275,285	United Kingdom	$224,660
Canada	427,275	Commonwealth	1,325
Fiji	20	Canada	70,685
Hong Kong	15	Belgium	400
New Zealand	7,790	France	51,000
Bismarck Archipelago	55	Germany	415
France	7,180	Italy	22,435
Germany	330	Japan	2,545
Italy	17,745	Russia	85
Japan	2,545	Sweden	20
Java	1,980	U. S. A.	1,302,530
Sweden	20		
U. S. A.	935,850		
Total	$1,676,100	Total	$1,676,100

the effect of raising the cost of living, there are special automobile imposts varying from $10 to $50 according to size. In the truck field things are particularly bright, since the large number of users who have lost their vehicles to the government will buy anything capable of doing the work.

Country Is Prosperous

New South Wales has always been the leading automobile buying state in Australia on account of its exceptionally large farming and pasturage districts.

Despite the war, business in that state, in fact in the whole of Australia, remains prosperous and people are purchasing freely. That the Australian government is doing all in its power to better export conditions is manifested in the recent purchase of cargo steamers on account of excessive freight rates and the general difficulties in obtaining merchandise.

Canada, the United Kingdom, Italy and France ranked respectively next to the United States in the value of chassis shipments. Of the four, only Canada and Italy showed increases over 1915 shipments. Canada, which ranked second, exported $273,775 worth of chassis in the first half of this year, as compared with $89,945 in the first half of 1915.

U. S. Shipments $1,205,730

The accompanying table shows some interesting figures. Though shipments of chassis from the United Kingdom totaled $204,470, only $140,910 worth of automobiles actually were manufactured in that country. The total shipment of automobiles from the United States was valued at $1,205,730, while the value of the cars manufactured there and sent to New South Wales was $1,155,955. Canadian shipments to New South Wales were less than actually made for that country. Canada shipped $216,045 worth of automobiles direct to New South Wales, while the value of the cars made in that country and received in New South Wales was $273,775, which brings out the fact that many Canadian cars are either being shipped from the United States or are being sent to the United Kingdom and thence to their destination.

Paint Poles White at Danger Points

WHILE all kinds of efforts are being put forth by State and county highway officials to minimize the dangers of night driving to automobilists due to curves, bridges and other road conditions, one of the simplest safety measures possible seems to have been overlooked. If telegraph and telephone poles in the vicinity of the point of danger were painted white, drivers would recognize their significance at once, and, in fact, could hardly help noticing them so that they would be put on their guard. F. W. Pelton, publicity manager of the Mitchell Motors Co., Inc., Racine, Wis., is responsible for this suggestion to the highway commissions, his idea being that the ten poles on each side of the danger point should be painted about 10 ft. from the ground for about a 5-ft. strip of white with a red band about 1 ft. wide in the center.

At railroad crossings, Mr. Pelton points out, railroad officials would be glad to co-operate, for many railroad crossings are so obscured by buildings, trees or other obstacles to vision that a car driver does not realize the nearness of danger until he is right upon it.

Disk Wheel of Great Simplicity

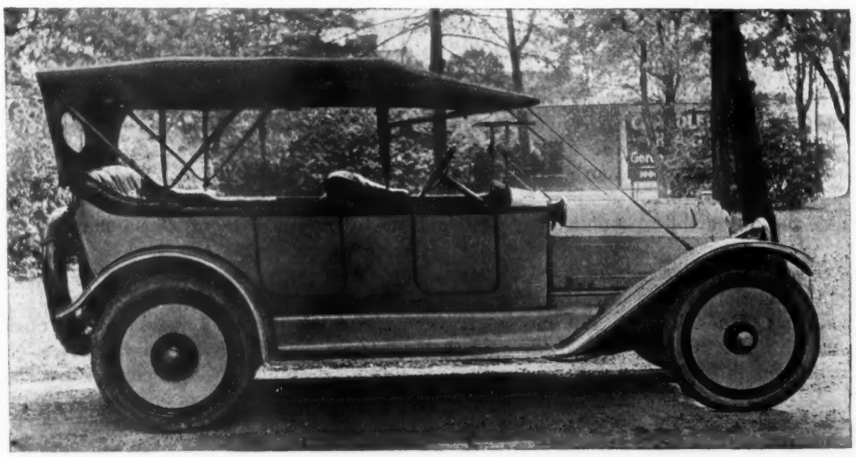
AT the plant of the Detroit Pressed Steel Co., Detroit, Mich., A. L. Putman has recently developed a steel disk wheel which has an extreme simplicity in combination with good appearance and ease of manufacture. Putman uses only a single disk, and has patented a special machine wherein the disk is rolled in such a way that it is thickest at the center where attachment to the hub is made, and thinnest at the edge, the section tapering as shown in the sectional cut.

The outer edge of the disk can be riveted to any sort of felloe band to carry any kind of rim, and it is merely clamped between two plates on the hub, dowel pins being provided to take the drive for the rear wheels.

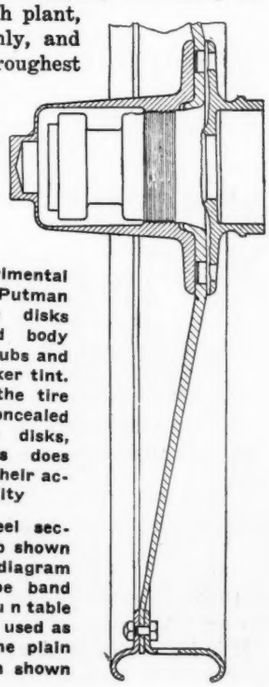
The outer shell of the hub is supposed to be made so that it can be unscrewed readily, and has some simple lock to keep it tight when holding the disk in place, this allowing the whole wheel to be detached as easily as any wire wheel.

The wheels are mounted on the car with the concave side outward, and it is noticeable that they have none of the clumsy look always possessed by disk wheels which stick outward at the center. The actual car has to be seen for it to be possible to realize how utterly different in appearance these wheels really are. Instead of looking heavy their real lightness is apparent at a glance.

It is reported that the Michelin company has lately developed a disk wheel in its French plant, which also uses a single disk only, and that this has proved equal to the roughest work in the war zone. The Putman wheel has been tried out on the roughest roads in Michigan without showing any trace of weakness.



In the experimental car with Putman wheels the disks are painted body color with hubs and rims in darker tint. Note that the tire valves are concealed behind the disks, though this does not hinder their accessibility



In the wheel section the hub shown is only a diagram and a felloe band for demountable rims can be used as easily as the plain clincher rim shown

The FORUM

Wants Greater Economy in Automobile Running Cost

By V. A. N.

IN these days when efficiency and economy are playing such an important role in manufacturing in general, and the automobile industry in particular, it seems to the layman quite incomprehensible that so little attention is being given to efficiency and economy in the finished product.

Efficiency and economy are largely synonymous. When we read descriptions of small bore, long stroke, high efficiency motors we naturally think of economy in operation, and when we read of conveyors shooting the parts around through the factory, each mechanic getting in his whack as the load passes, economy stares us in the face—until we behold the finished product; then what happens?

Consider for a moment in these days of advanced metallurgy, the cost of gasoline, tires, etc., the proposition of using a 2700 to 3000 lb. (or more) machine to haul five passengers over our highways more or less comfortably—adding in not a few instances a V-motor of eight to twelve cylinders to do the hauling. If that isn't a travesty on efficiency, what is it?

Is there any logical reason why we have not in the market to-day a well-made, comfortable, durable, accessible four-cylinder, 112 to 115-in. wheelbase, five-passenger car weighing ready for the road 2000 to 2300 lb. and selling for $1,200 to $1,500?

Franklin builds a real automobile weighing 2,289 lb., which is a delight to drive and ride in. Why is it that we have not the privilege of buying an equally durable and comfortable, efficient four-cylinder car of the water-cooled type?

Efficiency being so desirable in manufacturing, why not turn at least a little of it loose and head it toward the composition of the finished product?

Troubles with Kerosene and Water Cooling

By Harmon J. Kline

APPARENTLY the interest manifested during the past few months in the two-cycle type of motor has died out is so far as the discussion between the engineers is concerned. It seems to me that you were getting at the bottom of things, and if the various parties interested would do a little real work to find out where they stood instead of merely talking about their own inventions in particular, we would obtain some valuable information. The fundamental difficulties with the two-cycle motor have been bared and it needs some argument to disillusion ourselves of the fact that it has not been a very great success in the automobile field.

Any one who has had actual experience with kerosene engines, other than the semi-Diesel, will soon realize that even the best of vaporizers are not the final solution. One does not have to work on pure kerosene but the present motor fuel offers enough problems for the automobile engineer for the next few years.

It is impossible to obtain a fixed gas from kerosene at the temperatures available from the exhaust heat of the internal combustion engine as we know it. We may atomize the fuel and supply sufficient heat to keep it in the vapor form but it is not a fixed gas in that it will condense on coming in contact with a cooler surface. The latent heat of vaporization is about all we can hope to get. If there were more heat, it would merely expand the mixture and help to disassociate the fuel into other constituents, a thing not at all desirable owing to tarry deposits.

The present motor fuel contains from 25 to 40 per cent kerosene and it is this amount that is giving trouble to the man who must make the best of the situation. One does not have to look far to find that a great many motorists are having enough trouble starting and operating their motors in damp or cold weather to even think of using kerosene alone. It often takes some time to warm the motors up to the point where they will operate satisfactorily.

Air Cooling a Suggestion

Perhaps air cooling would make a decided difference, as has been proved in motorcycle practice where the engine is entirely exposed. The amount of metal involved is about equal in both the air- and water-cooled types but the latter has a body of water that must be raised to a temperature below the boiling point and having a specific heat much higher than that of cast iron or aluminum. However, to operate an engine on kerosene or even our low grade fuel, the operating temperatures are far below those at which the maximum efficiency may be obtained. The ultimate power developed, and pre-ignition, are practically the only limiting factors. These may be eliminated by careful design and internal air cooling, while extreme high speed is not desirable in motors where highest economy and durability are the controlling factors.

Present Fuel Troubles

The trouble found at present in the use of our so-called "motor fuel" is before the engine has reached its normal operating temperature. There are many, even dealers in cars, who have found that after 500 or 1000 miles' running they had more "oil" in the base of their engine than was originally put in. Many bearings have been burnt out as a result, and it doesn't seem like good advertising to boast of the mileage obtained per gallon of oil when often the public is paying a big price to do the same thing.

Heavy Fuel Possibilities

It must be evident to many of us that the four-cycle motor is not well suited to use fuels heavier than gasoline or motor fuel, in view of the present difficulties, unless some means are employed other than the kerosene carburetor and vaporizer. Of course, results may be obtained with special equipment in the hands of an expert and apparently satisfactory operation had after the engine warms up, but the rub is to obtain a motor that will give adequate service in the hands of the public. If the man who knows little of these matters is forced or wants to use kerosene in his car, it does not look like good business to sell him something not entirely satisfactory in service.

The matter of temperature control is important, but does not go far enough to give maximum economy and service. I think air cooling, if properly applied, would come closer to the mark than all the devices put on to make a satisfactory water-cooled job, at least in the motor car. I know of at least one prominent manufacturer who has discarded alumi-

num pistons for those of cast iron, mainly to obtain higher operating temperatures. The design of the piston was up to the best practice and long rods are used to reduce side pressure. I know of others who are having some trouble from pistons seizing as the speed is increased, though the clearance is large. Others are troubled with an excess of fuel in the crankcase, blown past the pistons. And yet the operating temperatures are not as high as to give maximum efficiency all the time and in some cases too high to give proper lubrication of pistons and even main bearings, the latter due to extreme speeds.

Invents Device To Keep Dust Out of Cylinders

By Dr. F. Strattner Orem

AS a subscriber I am writing for the information of Chas. E. Duryea relative to his comment on Mr. Schipper's article on U. S. trucks in Mexico, to the need of filters, to prevent dust entering the engine cylinders.

I have invented and have had in use for about 2½ years on a car that has made over 14,000 miles, a device that prevents dust entering the engine cylinders, does not lessen the amount of air the engine requires and does not need to be sent to the wash at all. A whisk broom used on the surface of the filtering material every 10,000 miles is advisable, but not always necessary. In this connection it may be stated that, due to keeping the road dust out of the engine cylinders, carbon deposits are practically nil.

Thinks Car Builders Do Not Provide Against Minor Noises

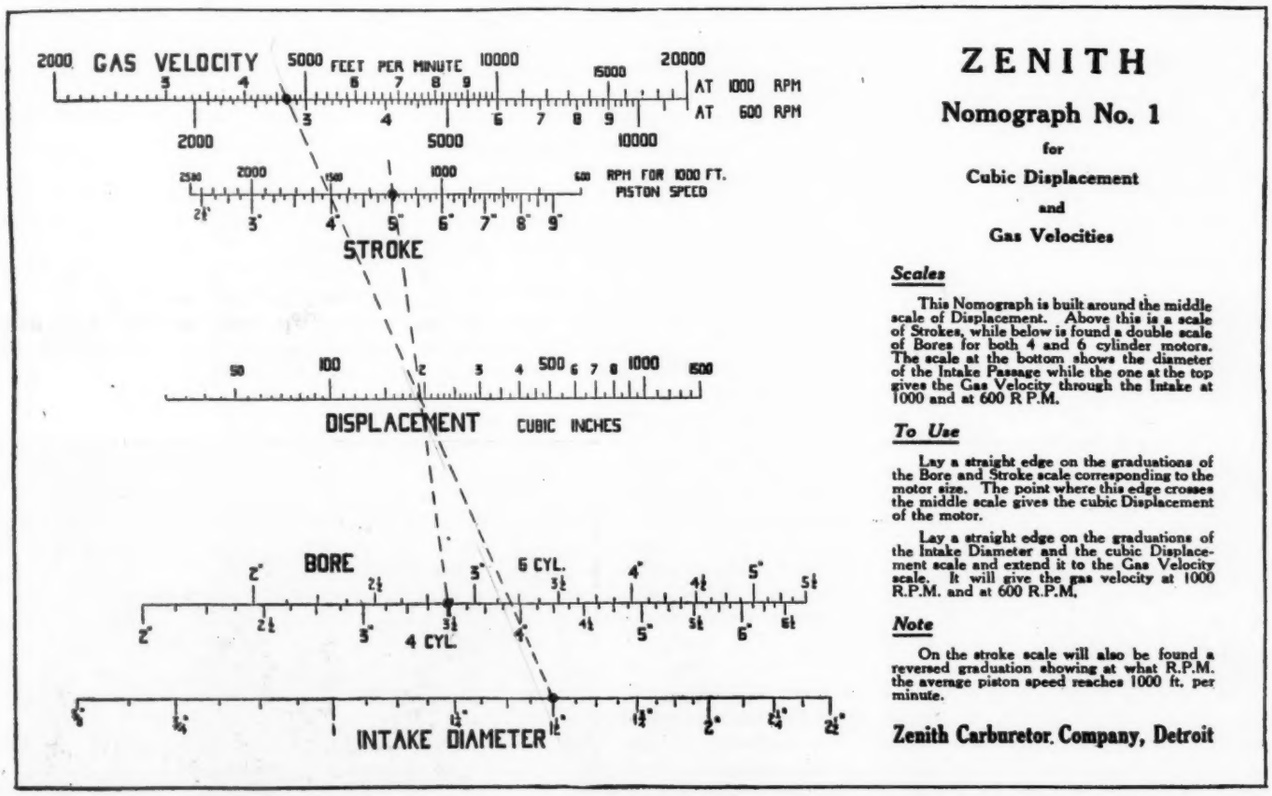
By M. K. Woodford

WHY do car manufacturers neglect to provide against the minor squeaks and rattles which develop after a new car has been run a few hundred miles? Frequently I have seen a beautiful high-priced car swaying gracefully and easily over a rough pavement or road without the slightest sound emanating from the engine or the transmission system, but a succession of viciously disagreeable and annoying squeaks and rattles radiating from almost every other part of its anatomy. These noises were all absolutely unnecessary and simply served to spoil the excellent impression given by the actual performance of the car.

It seems to me that a little attention on the part of the car maker to the sources and causes of these noises would enable him to provide against their development under what might be considered normal service. The most common causes of such noises are poorly mounted or lubricated springs, rattling doors, loosely-fitting floorboards, bad provisions for carrying tools and other loose equipment and defectively attached mud aprons, etc.

Some manufacturers, notably Nordyke & Marmon, have taken up this matter and have endeavored to provide against these noises by special points of design in the car, and other makers would find it to their lasting advantage and to the credit of the reputation of their cars to do something along the same line.

Zenith Nomograph for Displacement and Gas Velocities


2000 GAS VELOCITY 5000 FEET PER MINUTE 10000 15000 20000
AT 1000 RPM
AT 600 RPM
2000 5000 10000
RPM FOR 1000 FT. PISTON SPEED
STROKE
DISPLACEMENT CUBIC INCHES
BORE
6 CYL.
4 CYL.
INTAKE DIAMETER
ZENITH
Nomograph No. 1
for
Cubic Displacement
and
Gas Velocities
Scales
This Nomograph is built around the middle scale of Displacement. Above this is a scale of Strokes, while below is found a double scale of Bores for both 4 and 6 cylinder motors. The scale at the bottom shows the diameter of the Intake Passage while the one at the top gives the Gas Velocity through the Intake at 1000 and at 600 R.P.M.
To Use
Lay a straight edge on the graduations of the Bore and Stroke scale corresponding to the motor size. The point where this edge crosses the middle scale gives the cubic Displacement of the motor.
Lay a straight edge on the graduations of the Intake Diameter and the cubic Displacement scale and extend it to the Gas Velocity scale. It will give the gas velocity at 1000 R.P.M. and at 600 R.P.M.
Note
On the stroke scale will also be found a reversed graduation showing at what R.P.M. the average piston speed reaches 1000 ft. per minute.
Zenith Carburetor Company, Detroit

The diagram reproduced above has been brought out by the Zenith Carburetor Co., Detroit, Mich., with the idea of rendering it possible to approximate quickly various quantities in connection with the displacement in cu. in., gas velocities of automobile engines, etc. The dotted lines illustrate the working out of these quantities in accordance with the directions given above when the engine under consideration has a 3½-in. bore and a 5-in. stroke, the intake diameter being 1½ in.

Running on Town Gas

Shortage of Gasoline Drives Omnibus Proprietors in England To Try Gas as Fuel—Essential Things To Be Observed in Engine Testing—British Patent Covers Device for Pre-Heating Fuel Going to Carbureter

By A. Ludlow Clayden

IN America many manufacturers use either natural gas or town gas for the preliminary testing of their engines, and any good gasoline engine will run well on gas, though it will not give the same power as on gasoline. The *Commercial Motor*, England, in a recent issue describes how a firm owning several omnibuses has tried to substitute gas for liquid fuel in running some local services in a small town in the British Midlands. The experiment appears to have been quite successful and is described as follows:

"Andrew Barton Bros., of Beeston, are as well known to the trade in the Midlands as Daimler or Leyland is to the industry as a whole. They are large garage proprietors, and run several useful omnibus services, besides, in more normal times, pleasure trips on chars-à-bancs.

"Recent troubles over gasoline supplies, and the necessity, for national purposes, of continuing their bus services, which mainly convey munition workers to and from their places of employment, caused the firm to cast about for other means of supplying power.

A Simple Bag Used

"That gas would serve as fuel they well knew. How to store it on the vehicles for use was the problem. At first a collapsible framework with canvas covering, built in the form of a bellows, was tried. Although this served the purpose, it was defective in practical application owing to the area it presented, in all directions, to the wind. The present style of reservoir, a simple bag, was tried with some misgiving, as it was feared that it would have a tendency to roll. As a matter of fact, the 'gasbag' is a most pronounced success. It gives to the wind, presenting a streamline form.

"This gasbag, a simply-made sack of canvas with rubber insertion, rendering it water and gastight, holds 450 cu. ft. It is roped or strapped to the roof of the chars-à-bancs, and is filled by coupling an inlet branch to the gas meter. The same branch serves for attachment of the flexible pipe conveying the gas to the engine. The fuel is conveyed to a point just above the engine throttle. An ordinary cock close to the engine controls the supply, and this is regulated by a lever directly coupled to the throttle-valve lever, so that the gas supply is increased or diminished in accordance with engine speed.

Many Advantages

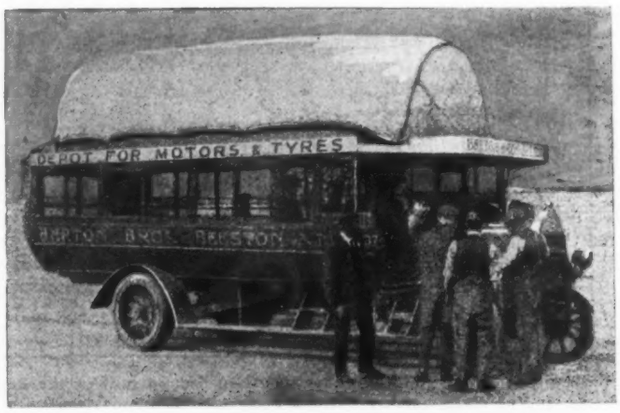
"The advantages of gas as a fuel, used in this fashion, are many. It is clean; there is no waste by spilling; the shape of the bag gives an immediate indication of the remaining supply of fuel, while also serving as a perpetual check upon the relative efficiencies of different drivers; the engine gives off the same power, and can be made to run more slowly; it starts easier, and requires less lubricating oil owing to the absence of gasoline to wash it away. Moreover, judging by results, the actual engine economy must be considerable to judge by the small volume of gas consumed when the wagon is in the hands of a careful driver.

Short Mileage

"The disadvantage is, of course, the short mileage possible per charge of gas. Actual running costs, considering that of fuel alone, and leaving economies of oil, etc., out of the question, are strongly in favor of this fuel. Arrangements are being made so that the time occupied in filling each of the gasbags shall be 3 min.

"Barton Bros. pay 32 cents per 1000 cu. ft. of gas, being large users for industrial purposes. The mileage per 1000 varies largely with the efficiency per driver, but averages 30, the equivalent of 1 cent per mile. Calculating on a basis of 8 m.p.g. of gasoline—a conservative estimate with much stopping and starting—this means that, to compete, gasoline would have to be obtained at 8 cents per gallon, an impossibility nowadays.

"As concerning the weight of the receptacle, *it floats* when filled, and its cost—Barton Bros., Beeston, England, are arranging to sell them at $75 each."



English bus equipped for running on uncompressed town gas

Testing Scientifically

The Automobile Engineer, England, has devoted much space to tests and testing, and one of the most helpful articles which has appeared in recent years is given in a recent issue. This is written by W. Ferrier Brown and is intended to be a guide to those new to the work of testing gasoline motors. It outlines very clearly what the tester should observe and what he should record.

It is necessary to have some method of preserving and recording data. It need not be any particular system. In fact, an arrangement of one's own invention will probably give best satisfaction, because a system so built up will be perfectly familiar.

With engine test data certain items must be taken by direct test on the bench, or some similar test, and from these known items the others can be deduced. Also certain engine dimensions must be known.

Firstly, there are the data that must be taken from the engine by test. The values are taken at various engine revolutions for each item, and over the total range of the engine speed. These are:

(*a*) Brake-horse-power.

(*b*) Power required to drive engine, *i.e.*, the amount of power lost to friction in the engine.

(*c*) Fuel consumption and specific gravity of the fuel.

(*d*) Oil consumption.

The engine dimensions required are:

(*a*) Bore of cylinder.

(*b*) Stroke.

(*c*) Number of cylinders.

(*d*) Engine weight, complete with flywheel.

Under this heading might also be listed compression ratio.

From the preceding data the following can be calculated:

(*a*) Engine weight per b.h.p.

(*b*) B.H.P. per liter of cylinder capacity.

(*c*) Mechanical efficiency.

(*d*) Indicated thermal efficiency.

(*e*) Brake thermal efficiency.

(*f*) Torque.

(*g*) Mean effective pressure.

To illustrate the article, an engine of the following dimensions will be taken:

Bore, 85 mm.

Stroke, 130 mm.

Number of cylinders, four.

Engine weight, 530 lb.

This engine, then, has a cubic capacity of 2940 c.c.—that is, 2.94 liters. It may be preferable for some to have the engine dimensions in inches and the capacity in cubic inches or pints, but metric measure is easier to handle, especially if the bore and stroke are in metric. That, however, is a detail that can be made to suit.

Referring to Fig. 1, the curves of brake horsepower and friction horsepower are shown taken over a range of from 400 to 2000 r.p.m. The curve of b.h.p. can be taken by friction or water brake, or electric dynamometer, whereas, the curve of friction h.p. must be taken by an electric dynamometer, as the engine has to be driven. The power required to drive the engine is the friction h.p.

By adding the curves of brake horsepower and friction horsepower, the curve

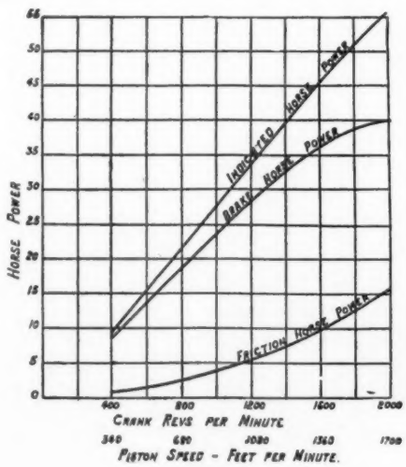


Fig. 1

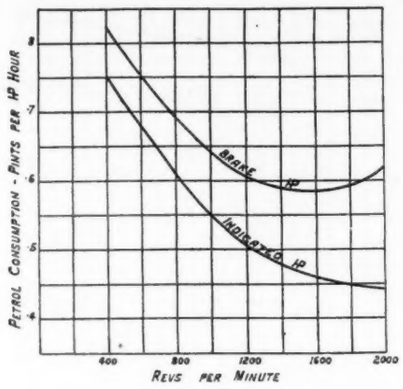


Fig. 2

of indicated horsepower can be constructed. The i.h.p. curve for the engine under consideration is shown in Fig. 1. This curve gives the amount of work performed in the engine cylinder. The curve of i.h.p. could also be constructed from an indicator diagram, but this method has not yet become anything like universal among manufacturers. These curves are plotted on a base of crank angles generally, but, as in this diagram, a second abscissa is given, namely, piston speed. This is a useful item to know, and, of course, varies directly as the engine revolutions.

The curves of fuel consumption (Fig. 2) are of first-rate importance, especially to the car user, because a low consumption means lower running costs. The two curves show the consumption in pints per b.h.p. hour and per i.h.p. hour respectively. As with the curve of b.h.p., the consumption must be taken by test at various engine speeds.

It may seem inconsistent to introduce pints or pounds when talking of fuel consumption after using metric measure for engine dimensions, yet it is customary, and one generally thinks of the values of various items in certain units and needs must have the values in those units to weigh up the relative performances and pronounce a judgment.

Fig. 3 shows curves of mean effective pressure (m.e.p.) in pounds per square inch of piston area, and torque, available at the crankshaft, in pounds at one foot radius. These items are functions of the b.h.p., and could be represented by one curve with two sets of values for m.e.p. and torque respectively.

The calculation is as follows:

(*a*) Mean Effective Pressure.

Let p = M.E.P. in lb. per sq. in.

$$p = \frac{\text{B.H.P.} \times 8262 \times 10^6}{\text{S}rk\text{D}^3}$$

where B.H.P. = Brake horsepower.

S = Stroke of engine in mm.

D = Diameter of cylinders in mm.

k = Total number of working strokes per revolution of the crankshaft.

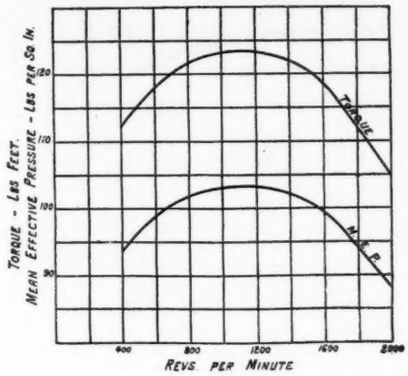


Fig. 3

r = Engine revolutions per minute.

(*b*) Torque.

Let T = Torque in lb. at one foot radius.

$$= \frac{\text{B.H.P.}}{r} \times 5252$$

In the foregoing formulæ the constants have been worked out to simplify the calculation.

Interesting and important are the curves of efficiencies as shown in Fig. 4. Four curves are given, viz., mechanical efficiency, brake thermal efficiency, indicated thermal efficiency, and available efficiency (as compared with the air standard).

Mechanical efficiency gives the percentage of useful work done at the crankshaft, that is, the b.h.p. as a percentage of the i.h.p. Thermal efficiency gives the useful work done, as a percentage of the total heat energy of the fuel.

One horsepower expressed in heat units is equal to 2545 British thermal units. Knowing the fuel consumption of the engine we can at once calculate the brake thermal efficiency. For general calculation, the heat value of one pound of gasoline of 0.720 specific gravity may be taken as 19,000 B.Th. units, unless, of course, specific values are stated. This will give 17,100 B.Th. units per pint.

Similarly, the curve of indicated thermal efficiency can be constructed, basing the calculation on the fuel per indicated horsepower.

In 1903 the Institution of Civil Engineers formed a committee to settle a basis of comparison for internal combustion engines. This committee recommended what is known as the "Air Standard Efficiency." The "air standard" gives the theoretical maximum thermal efficiency for internal combustion engines working on the four-stroke cycle.

Values are obtained from the formulæ:

$$\text{A.S. efficiency} = 1 - \left(\frac{\text{I}}{r}\right)^{0.4}$$

Where r = compression ratio.

$$= \frac{\text{Y} + v}{v}$$

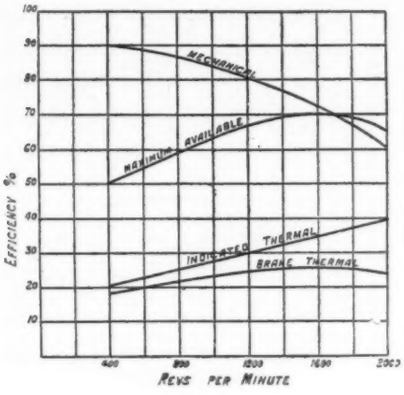


Fig. 4

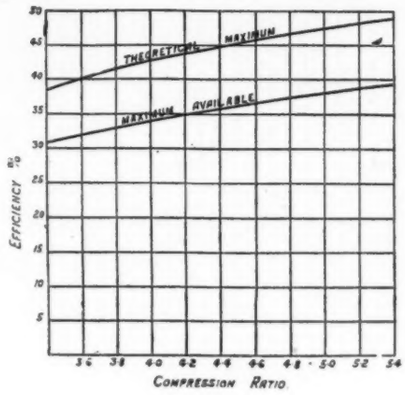


Fig. 5

V = volume swept by piston.

v = volume of compression space.

The "Air Standard" gives a very high value, so Dugald Clerk in "The Gas Engine" gives the "maximum available efficiency" as 0.8 of the air standard.

Fig. 5 shows the relative values of the "air standard" and the "maximum available" efficiencies as a percentage of the total heat energy of the fuel consumed.

An Efficiency Curve

Returning to Fig. 4, a curve of available efficiency is there shown. This curve is the brake thermal efficiency taken as a percentage of the maximum available efficiency as given in Fig. 5. This curve shows the engine performance in rather a better light, and gives a better idea of the engine efficiency.

The remaining items to be considered are shown in Fig. 6. These are b.h.p. per liter of swept volume, and engine weight in lb. per b.h.p. The curve of b.h.p. per liter is a function of the b.h.p., and is constructed by dividing the b.h.p. by the total swept volume of the engine in liters for various speeds throughout the range of the engine. Similarly, the weight per b.h.p. is constructed by dividing the weight of the engine by the b.h.p. developed. Both these curves are useful as a basis of comparison between engines.

Mention might also be made of oil consumption and compression pressure. Oil consumption is not so readily measured, as it requires rather a long period really to determine this factor, so that in general it is given a constant value, and averages approximately one-tenth of the fuel consumption, viz., .05 to .08 pint per b.h.p.-hour. In vehicle work the oil consumption is generally given as so many miles per gallon.

Compression pressure can be taken by gage while the engine is running, and the curve constructed from the values. This curve will give the maximum compression pressure at the various speeds. It is more general, however, to quote the compression ratio, that is $\frac{V+v}{v}$, as previously referred to. This ratio varies over a range of from 4 to nearly 6. The engines of racing cars approach the higher value. A compression ratio of 4 will give a pressure of 70 lb. per sq. in., and a ratio of 5 about 100 lb. per sq. in. Compression falls off at high speeds, due largely to wire drawing and heating of the inlet gases. The best value for good volumetric efficiency seems to be somewhere about 120 ft. to 130 ft. per second past the valve for inlet.

Having now completed the list of data required for an engine test record, the information to be gleaned from the various curves will be briefly considered.

The curve of b.h.p., Fig. 1, generally takes the form as shown, but in some cases the straight part continues to high speeds, whereas in others the curve falls away rapidly after about 1200 revolutions. The differences are due to small or tortuous gas passages retarding the flow of the gases, so that the cylinders are not being so well filled, and to the relatively larger proportion of heat lost to cooling and radiation at the lower engine speeds. The reciprocating weight also affects the power and speed. These differences are clearly shown in Fig. 7, where are plotted comparative curves taken from a heavy vehicle engine, a good car engine, and a racing type of engine, all of approximately the same cubic capacity. In the racing engine, the gas passages are liberal, consistent with the speed at which the engine is designed to run, and the moving weights are reduced to a minimum.

Torque and M. E. P.

Mean effective pressure and torque, Fig. 3, can be treated together, being similar functions of the b.h.p. The curves as shown are characteristic of average engines, varying in value and the amount of falling off at low and high speeds. As with b.h.p., the falling away at low speed can be accounted for by the larger proportion of heat passing to the cooling water; also to poor mixture with regard to quality and quantity. At the highest speeds the proportion of heat lost to cooling is relatively smaller, but the volume of gas entering the cylinder is reduced, as previously explained, hence the falling off. By way of example, suppose there are two engines of the same cubic capacity, one with twelve cylinders and the other with four. The torque curve for the twelve-cylinder engine would, in all probability, show a lower value at low speeds, due to the heat lost to cooling by the relatively greater cylinder surface for the volume. This lower torque would, of course, mean less h.p. at these speeds. The torque curve also gives the critical speed of the engine—that is, the point at which maximum power is developed relative to the engine r.p.m.

The curves of efficiency, Fig. 4, tell a similar story, and, in addition, the brake thermal efficiency curve gives the best engine speed for maximum thermal efficiency. In the case under consideration the best efficiency is at 1600 revolutions. In other words, the most economical speed with regard to petrol consumption is at this speed, as shown in Fig. 2.

Mechanical Efficiency

Friction hp., Fig. 1, and mechanical efficiency, Fig. 4, can be treated together, as the one is directly related to the other. The mechanical efficiency shows the influence of reciprocating weights and engine friction at a glance, and makes a strong plea for the reduction of these factors. An average value for mechanical efficiency may be taken roundly at 80 per cent, although in some cases 90 per cent has been reached.

The curves of b.hp. per liter and engine weight per b.hp., Fig. 6, give comparative values between engines for these factors. Average values of b.hp. per liter at normal engine revolutions may be taken at 8 for commercial vehicle engines, 12 for touring car engines, 10 to 15 for aeroplane engines (according to the engine being of the direct drive or two-to-one reduction design), and as high as 30 for racing engines. The engine weight per hp. may be taken approximately at 20 lb. for commercial vehicles, 15 for touring car engines, 5 for aero engines, and somewhere about 8 for racing engines.

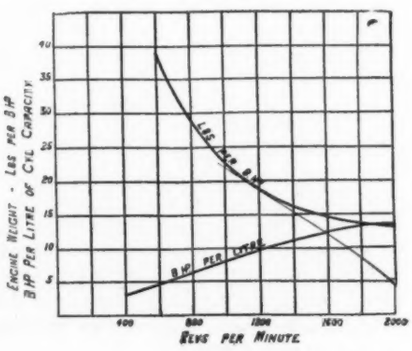


Fig. 6

With reference to the hp. curve, mention might be made that the position of the sparking plug has considerable effect on the power developed. Fig. 8 shows such a test result taken from an old type T-headed poppet valve engine. The sparking plug was normally situated over the inlet valve, when the power developed was as shown by the lower curve. By putting the sparking plug in the center of the combustion chamber the very substantial increase of power, as shown by the upper curve, was the result.

Present-day engines of the sleeve valve type and the overhead valve type naturally embody this feature in the design, and this probably accounts to some extent for the comparatively better power results given by such engines. Two sparking plugs per cylinder seem to have a similar effect.

Not Highly Accurate

In conclusion, the author would like it to be understood that the foregoing notes are not to be taken in the light of scientific experiment or investigation demanding a very high degree of accuracy in all results, and which, incidentally, would absorb much time. The aim is to make known the uses of such data as can be obtained in the routine work of engine testing, such as is done in the usual course of manufacture.

With Special Engines

Extraordinary results can be obtained with specially made engines, and it is up to manufacturers to incorporate these improvements as far as is practicable. But there are often parts in those special engines that are almost impossible from a commercial manufacturing point of view, or of so drastic a nature that the change would mean a big effort financially, and probably running the gauntlet with regard to popularity.

Test records made in the course of manufacturing have a most significant value, and may be of even greater value at the moment than what might be termed highly scientific research, because of the fact that these are the records of a commercial product. The higher researches get their reward in course of time, as improvements in design and efficiency become part of the manufactured article, and are as a guiding star to the industry.

General Charts of Value

In addition to the records of individual engines, general charts for each item and type of engine should be constructed. These general charts would all be plotted at the normal engine speed, or for similar engines at some predetermined speed, and would show at once the value of new experimental design and the general progress made.

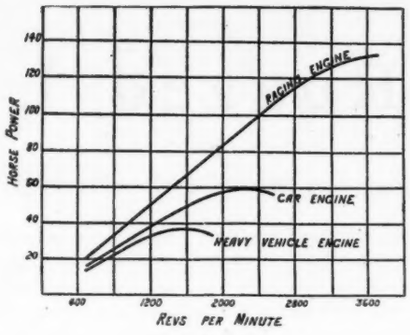


Fig. 7

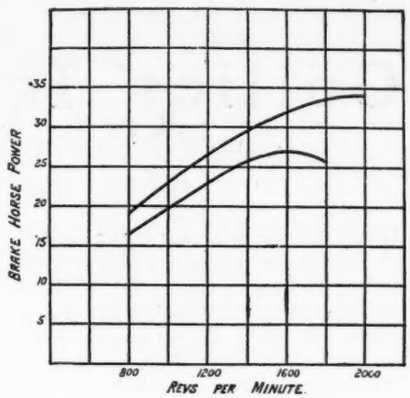


Fig. 8

Tanks—A British Account

IN its issue dated Sept. 22 *The Auto*, England, prints the following editorial, which is interesting, as it gives some of the history relating to the creation of the tanks, or super-armored cars, though it gives us no more than we have already had regarding the size or detail of these impressive machines. The British automobile press is, as a whole, so very reticent in mentioning the tanks that it is obvious no information is going to be available for some time to come. There seems, however, no doubt but that they are about the largest caterpillars ever built, and that they embody many ideas from both sides of the Atlantic. The editorial in *The Auto* says:

"At last the armored car appears to have really come into its own. No one who read Sir Douglas Haig's dispatch and the graphic accounts sent by the correspondents at the front relating to the work of the 'tanks' during the last great advance could have any doubt as to that. It would be going too far to say at this juncture that armored cars are destined to exercise a decisive effect on the fortunes of the war, but that they are likely to prove of superlative value there can be no room for doubt.

A New Weapon

"It is impossible for us at the moment to trace the full history of British armored cars in the present war. Not the least interesting of the post-war stories, however, will be that of the inside history of this new arm of the service—and written it will be when the time comes.

"The outbreak of the war found us without anything in the shape of a fighting car. In that we were not singular. As a matter of fact, we believe that the Germans were the only power possessing such vehicles. True, there were fighting cars of a kind, but these were anti-aircraft cars pure and simple, and thus did not fall within the category of armored cars as we now understand them. Even of these we ourselves possessed none.

"It was the navy which was responsible for their introduction to our own service. In the very early days of the war naval aeroplane squadrons were sent over to operate from Dunkirk and Ostend, and with them went certain improvised armored cars, which were constituted into a small force known as 'Aeroplane Support.' Considering their limitations of construction and armament, these cars did remarkably well, but it was seen that the type was quite unsuitable for the purposes of the fighting as it developed after the first 2 months of war. Then was evolved the real armored car as we knew it when it was working under the R.N.A.S., completely armored, with a revolving turret and armed with one or more machine guns. The navy was fortunate at that time in having at its head a first lord with imagination. It is not too much to say that had Mr. Churchill not been at the Admiralty when he was, there is a strong probability that armored cars and 'tanks' would not have come into being until long after they did. Clearly, armored cars are a part of the land service and, *per se*, had nothing to do with the navy. Still it was left to the navy to develop the arm, and Commodore Sueter, who was then at the head of the air department, threw himself into the job with the same enthusiasm with which he had pioneered the submarine and the aeroplane. The result was the R.N. Armored Car Division, which under Commodore Boothby and his officers became a highly disciplined and efficient force. Its units served and did well wherever there was fighting to be done. In France, Gallipoli, Egypt, Southwest Africa and East Africa, and even now in Russia, the naval cars and their personnel have rendered good service.

Evolving the Tanks

"All this time experimental work on a new and better type of heavy vehicle, more suitable for trench warfare, was being carried on, and when, from motives of policy, the army took over the cars from the R.N.A.S. rather more than a year ago, these experiments had practically resulted in evolving the design of the vehicle which has just proved such a surprise to the Germans."

Collier Is Rugged Light Truck

A Real Truck Design for Light Loads—Runs on Pneumatic Tires

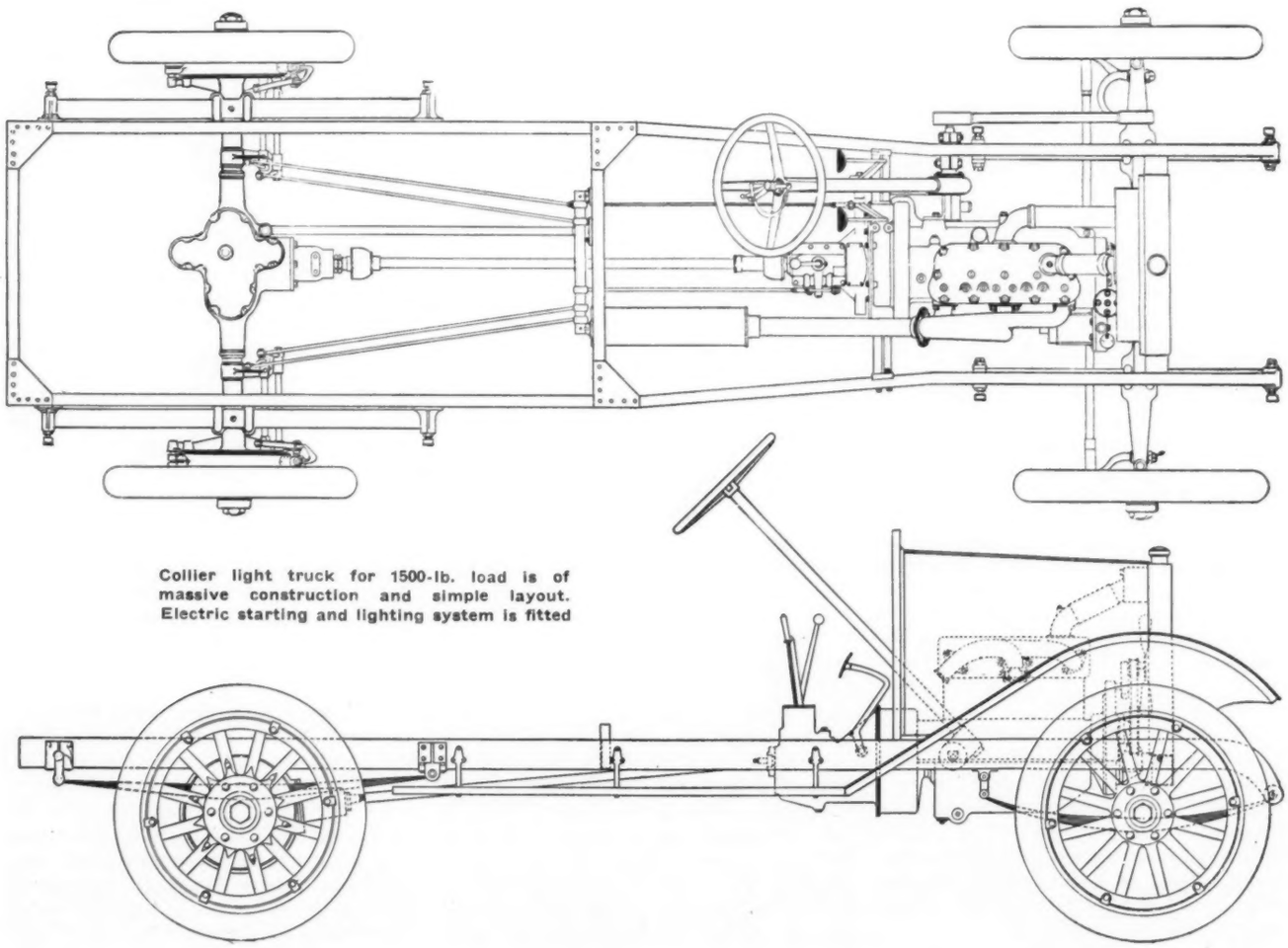
THERE are not very many 1500-lb. trucks that are really built for the job and are something more than extra strong passenger cars. One of the select few is the Collier, built by the Collier Motor Truck Co., Painsville, Ohio. This has a special Lycoming engine with four cylinders 3¼ by 5 in. with detachable head, making for easy carbon removal. The crankshaft has two bearings and is 2¼ in. in diameter; the valves are 1½ in. with ¼-in. lift and are operated by mushroom type cam followers. A somewhat unusual feature for a truck is the provision for an electrical starting and lighting system, this being a two-unit Dyneto outfit. The flywheel is recessed, and has a steel ring gear attached to is so as to guard against any risk of the teeth chipping. Lubrication is cared for by a gear pump and cooling is thermo-syphon, there being a 16-in. fan mounted on annular ball bearings. Either a Carter or a Zenith carbureter is fitted.

The clutch is a dry disk and the gearset gives three speeds, the transmission being in unit with the engine. All bearings, including the spigot bearing in the flywheel, are annular type ball, and the shafts are nickel steel. The rear axle ratio is 6 to 1, this being the high gear, and the low and intermediate gears give 18 and 10 to 1 respectively. The reverse is extra low for maximum leverage, being 24 to 1.

For the final drive a straight bevel is employed, this being easily accommodated of robust proportions with so high a ratio as 6 to 1. The axle is three-quarter floating, and a special point is made of mounting the spring tables very close to the wheels, so as to eliminate bending stresses on the ends of the axle sleeves as much as possible. Both brakes are on the rear axle, the foot brake being the external member of the pair. There are two universals designed to hold a large amount of oil and to require only occasional attention.

For the frame channel steel of a heavy section, 4 by 1½ by ¼ in. is used; very heavy spring hangers are used and these are held in place with an extra large number of rivets. On the springs the main leaves are made from silico-manganese steel to guard against breakage near the eyes, the other plates being heat treated carbon steel of the best grade.

Despite its robust construction the total weight is not excessive, so the tires used are 33 by 4 in pneumatic, on demountable rims. Crowned fenders are supplied of 20 gage steel, and there are running boards of heavy ash. Ash is also used for the body which is finished in vermillion and is 6 ft., 6 in. long, measuring from the back of the driver's seat to the tailboard.



Collier light truck for 1500-lb. load is of massive construction and simple layout. Electric starting and lighting system is fitted

The Rostrum

Overheating Causes Knock on Hills

EDITOR THE AUTOMOBILE:—I have a Buick C-25 driven about 10,000 miles which develops a knock on the hills and lack of power. Retarding the spark relieves the condition for several hundred feet when the knock is again apparent and engine has no power. Shifting into intermediate does not overcome the knock until the engine is running about the maximum speed on this gear. This trouble arises on grades that a 25-hp. engine should make with ease on direct drive. The knock is not so noticeable after having carbon burnt out but after running less than 100 miles it is as bad as ever. I have changed the firing point to at least six different positions, both retarding and advancing, but always return to the one setting which I find operates best. I have equipped the car with a Schebler carbureter and have tried various mixtures but, as with the spark, I find one setting is more satisfactory than others, neither spark nor mixture experiments relieving the trouble in question.

It has been suggested that I place shims under the cylinders, raising them anywhere from a 30 sec. to 1/16 of an inch, but as this would increase the combustion chamber I believe such action would make conditions worse. Being familiar with gas engine principles, what would your opinion be on this?

In view of the fact that all other units are apparently in perfect condition, also that compression is good, fat spark at each plug, connecting-rod and main bearings all tight, I would appreciate your views as to what causes this and also what action would be necessary to overcome the trouble.

The knock is a typical carbon clink, but the burning out of all carbon only partially overcomes the defect and it is only a question of 50 or 100 miles and the trouble is as bad as ever.

Norwood, Ohio. C. K.

—It appears that your trouble is probably due to overheating. Two possible things might cause this, one that the pump is not operating properly. Sometimes the pin holding the impellor of the pump shaft shears off and then the water circulation will be greatly restricted. This will heat up the water in the engine but it will not necessarily cause steam to be produced.

Another thing which sometimes happens is that the rubber hose connections give way internally and almost close up the hole with a spongy mass of rubber and cotton. It cannot be that the compression is wrong since these cars were designed to have quite a normal compression.

Knock Probably in Oldham Coupling

Editor THE AUTOMOBILE:—I have a Buick M 10 which has a peculiar knocking in the transmission. In letting the car run slowly on smooth road it sounds like a crooked shaft wabbling. In running fast on smooth roads it is a knock, in climbing hills it is a sort of pounding, on low gear or reverse this is not heard at all. I have put a new front transmission bearing and tightened the back one but this makes no difference. When the car is standing and the motor not running, by taking hold of high speed lever and sliding forward gently the transmission as far back as reverse seems to slide ahead about ¼ in. but reverse does not move. I also notice that the transmission shaft works back and forth and has worn a notch into the front bearing hanger about ⅛-in. deep. I took the bearing out and turned the hanger around and it has worn the other side of the hanger the same way. This has been bothering me for some time.

I have been to two of the best garages around and one says the large brass bushing in transmission is worn; the other says that the high speed yoke is out of adjustment. Can you tell me what it is?

Ceres, N. Y. H. A. L.

—From your brief description we believe the noise is caused by the knock of the Oldham coupling at the front end of the transmission, inasmuch as the car has been driven probably at least 5 years and the coupling is badly worn.

With reference to the transmission sliding forward ¼-in. this is no doubt caused by the thrust washers being badly worn and in need of replacement. This could be greatly improved by taking up on the adjusting screw located on the rear end of the transmission driveshaft. We would suggest that the transmission be given general overhauling as the end play is probably the direct cause of the excessive wear on the front bearing hanger.

Ford Accepts Only Unemployed

Editor THE AUTOMOBILE:—Could you tell me how the Ford Motor Co. employs help? What wages and what hours and if one is obliged to be a citizen of Detroit any certain length of time?

Edmeton, N. Y. L. C. H.

—The Ford Motor Co. employs only people who are out of work, who have been residents of Detroit from 3 to 6 months and who make application in writing to H. Sommers, superintendent of employment. Wages after a probationary 6 months are $5 a day as a minimum basis. Working days are 8 hr.

Climatic Conditions Affect Carbureter

Editor THE AUTOMOBILE:—Is there a Singer agency in Boston, and if so, what is its address?

2—How is Moto-Meter pronounced?

3—Are gearless differentials good? Why is it that automobile manufacturers do not use them?

4—Are not carbureters affected by climatic conditions? How are they adjusted?

5—I have a Chalmers which needs repainting and has a few bumps in the fenders? The tire average is about 1800 miles. The engine could have more compression and the battery is a year old. Otherwise it is in good mechanical order as far as I know. About how much could we expect if we turned this car in?

Cambridge, Mass. A. McM.

—There is no Singer agency in Boston.

2—As two words. Notice the spelling which is the style adopted by the company.

3—Many manufacturers next year will be using differentials other than the ordinary kind.

4—Heat, cold and variations in humidity will affect the

carbureter. The necessary adjustments to changes in climate depend entirely upon the design of the particular instrument.

5—Used cars are not at present selling for very good prices. It would not be possible to give you an estimate as to the value of your car. Even after an expert examination it would be almost impossible to say if your car was worth exactly so much.

Cannot Take Hills on High

Editor THE AUTOMOBILE:—I have a Warren-Detroit which has a 4⅛ by 4½-in. bore and stroke. The timing was scaled on rod through head. Exhaust valve opens 1 7/16 before bottom center and above 3/16 in. past top center. Intake starts to open as exhaust closes and is fully open when exhaust valve is seated. Intake is closed 1/16 past bottom center. Is this correct? Car will easily make 50 to 55 m.p.h. on level, has good compression, good spark, but will not take the hills on high as it should. The car rolls very easily by turning the propeller shaft with my hands. Can you suggest anything that will liven it up?

Bondsville, Mass. F. L. W.

—Your car cannot be expected to take hills on high in the way that a modern machine will do. Possibly the reason is that you have an extra high gear ratio in the rear axle which would make the speed, but would not permit good high gear performance on hills.

It is unlikely that the timing is wrong since the particulars you give would suit good pulling at low speed better than they would suit high speed. You might try the effect of changing one tooth and make the inlet valve close that much later.

Definition of a High-Speed Engine

Editor THE AUTOMOBILE:—What speed does a motor have to make to be classed as a high-speed motor?

2—What is the maximum speed of the Ford motor and the block r.p.m.?

3—What is the meaning of backfire?

4—What is the fastest mile to date made by a motorcycle, what machine and who holds the record?

Harpersville, N. Y. C. W. B.

—A piston speed much in excess of 1000 ft. per minute causes an engine to be rated as a high-speed one.

2—The Ford engine has a normal speed of about 1000 r.p.m. which is what you probably mean by the block revolutions. If allowed to race it might reach 3000 r.p.m. for a short time.

3—When the explosion takes place too early while the piston is coming up on the compression stroke it will reverse the direction of rotation, blowing the piston back again. This is called the backfire. The same word is often used to describe explosions in the muffler caused by an unfired charge being passed through the valve and down the exhaust line where it is fired by the next exhaust. This is not really a backfire.

4—The fastest mile in a motorcycle was made by Humiston in an Excelsior at Los Angeles, Cal., in 36 sec.

Speeding Up a 1908 Ford

Editor THE AUTOMOBILE:—I have a 1908 or 1909 Ford which has circulating pump that I would like to build over into a speedster. Would like your advice regarding changes to be made to give best results. Would rather increase the speed of the motor than make the gear ratio more than 3 to 1.

Genoa, Ohio. G. L. B.

—You would probably get the most satisfactory results by changing the gear ratio. There are several firms who make special gears which will fit the Ford axle and you could get what you want from one or another of them. To get speed from the engine you should see that the crankshaft and connecting-rod bearings are particularly well fitted, that the valves have not been so much ground that they are beginning to sink into the cylinders and of course that the ignition and carbureter are working as they should. It is sometimes possible to gain speed by shortening the intake manifold and raising the carbureter although you will have to rearrange the fuel feed to allow you to do this. You can also obtain sets of aluminum alloy pistons ready to fit to a Ford engine and these will give you many more revolutions without overstraining the crankshaft.

Wiring Diagram of Maxwell 25

Editor THE AUTOMOBILE:—Kindly publish diagram of electric lighting, starting and ignition system of Maxwell 25.

Hamburg, Pa. C. E. K.

—Diagram of the Maxwell electrical system appears in Fig. 1.

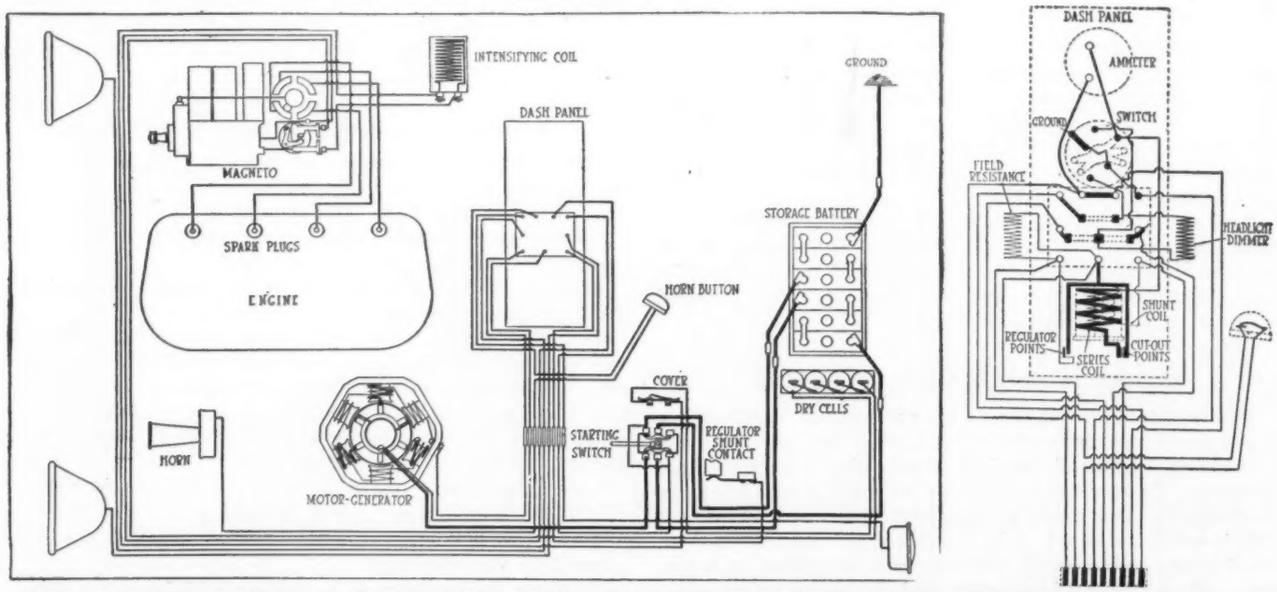


Fig. 1—Left—Wiring diagram of electric starting, lighting and ignition system of Maxwell 25. Right—Detail view of dash panel connections, showing shunt and series coils, field resistance, headlight dimmer, switch wiring, etc.

1000-Lb. Denmo Has Electric System

Deliveries on New Model To Start Dec. 15—Production Plans Laid for 5000 —Price To Be Under $800

BESIDES its 1¼-ton truck brought out a month or more ago the Denneen Motor Co. is bringing out a 1000-lb. wagon on which deliveries will start Dec. 15. It is planned to build this light vehicle in quantities of 5000 for the coming fiscal year and to sell it somewhere between $750 and $800.

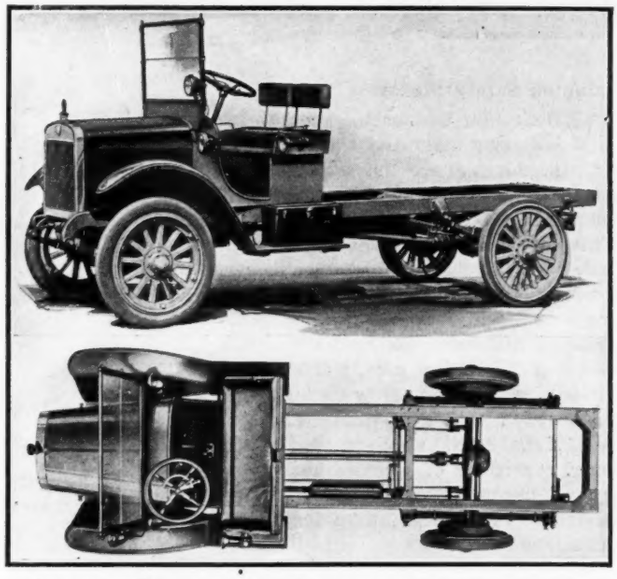
Like the larger vehicle, this 1000-pounder will be regularly equipped with an electric starting and lighting system, windshield, Boyce Motor-Meter. The standard Splitdorf generator and starter motor are used, the generator being so set as to cut in at approximately 5½ m.p.h. and to reach its maximum charging rate of 12 to 14 amp. at 11 m.p.h. This is the same as on the larger model. F. S. Denneen, president and designer, says that in the 1¼-ton capacity experimental truck the battery did not require recharging in a year of testing and general use. He calculates that in ordinary use the engine will run considerably more than the vehicle and so the possibilities of sufficient recharging are quite sufficient for battery needs.

In adding a complete electric lighting and starting system for light-capacity vehicles of this kind Engineer Denneen believes it possible to secure a better type of driver and also to economize quite materially in fuel consumption per year. The Gould battery is protected against jar by a spring mounting of the crate, which has worked out very successfully.

The use of pneumatic tires on the front wheels of the larger truck and on all four wheels of the 1000-lb. vehicle is in keeping with Denneen's plans to conserve the motor as much as possible and also make the truck easier to operate. When you start with electric starting and lighting, and add to this pneumatic tires and windshield you are giving the truck driver most factors necessary to conserve his energies, and if the conserving of driver's energies results in greater care for the truck and its machinery, then all of these parts should work for greater economy in the long run.

Both Denmo models are assembled jobs, the work of assembly being carried on in the Denneen Cleveland factory where 125,000 sq. ft. of floorspace is available and where the present capacity is ten trucks per week.

The units used in the 1½-tonner include Wisconsin 3¾ by 5-in. four-cylinder motor, Grant-Lees three-speed gearset, Torbensen front and rear axles, Ersac propeller shaft and universals, Fedders radiator mounted on a special spring-supported frame cross member, Pierce engine governor which governs according to the speed of the vehicle and not by the speed of the engine, Cooper springs, Borg & Beck dry-plate clutch, and 34 by 4½-in. pneumatics in front and 34 by 4-in. solids in rear. To these are added the Splitdorf electric starting and lighting outfits and Dixie magneto for ignition. The vehicle sells for $1,385.



Chassis of Denmo 1¼-ton, showing internal gear rear axle

Unit power plant construction is employed, the Wisconsin engine being incorporated with the clutch and gearbox.

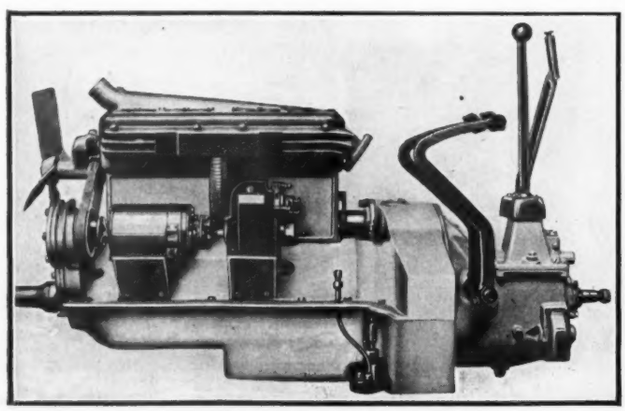
Thermo-syphon water circulation cools the engine, the radiator being of the Fedders cellular type, incased in sheet metal and mounted on a steel cradle, spring-mounted. This cradle extends across the bottom of the radiator so that there is no tendency for it to sag, the springs being flat ones, looped forward.

Gravity gasoline feed supplies the Stewart carbureter, and a short connection from a stove on the exhaust header furnishes hot air. The carbureter is mounted high enough to secure a short passage to the valves. The Pierce governor, driven by flexible shaft from behind the gearbox instead of from the motor, this drive limiting the truck speed only and having no effect on the motor otherwise. Thus the full power of the motor is available on the lower gears.

In the lubrication system of this motor pure pressure lubrication is used, a gear pump forcing the oil from the reservoir to the helical timing gears and over the bearings.

Driving the three-speed selective gearset is a Borg & Beck dry-plate clutch, from which the drive is taken on an approximately straight line, thanks to the tilting of the motor, to the Torbensen internal-gear-driven rear axle. Brakes on this axle are external and internal, the latter being foot-operated and the latter actuated by the hand lever.

The Hotchkiss drive principle is followed, the master leaves of the rear springs being made of vanadium steel for this purpose, the other leaves being of carbon steel, heat-treated. The radiator is carried well forward of the axle to shorten the wheelbase and still allow a generous length of load platform.



Unit power plant used on 1¼-ton Denmo, showing electric units

ACCESSORIES

Lexington Safety Signal

TWO circular 8-in. casings containing indicator dials and the necessary mechanism are the salient points in this signal. One of these casings is mounted at the front and one at the rear of the car, the front one having a small window for the observation of the driver, showing the working of the indicator and lamps. A black arrow on the white background of the casing points the direction the driver intends to take, and at night or in bad weather the arrow signal works in connection with the lights. There is a stop signal in the rear attached to the casing, consisting of a white hand with the word "Stop" in white letters. When working it is thrown into a horizontal position, with a red light directly over the word "Stop."

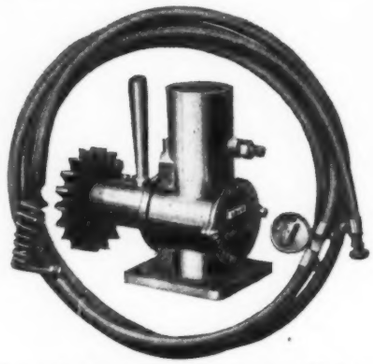
A 3½-in. three-way switch in a brass casing is clamped to the steering column under the wheel and operates the signals by four pushbuttons. The top button works the arrows to the right or left, and also the lights when the current is on. Another pushbutton on the top throws the current for the lights off and on, while the pushbutton underneath works the "Stop" signal. Another button on the end works the horn. The main feed wire is run to each indicator and to the switch on the steering column and then to the battery, return wires being properly connected. All wiring is run through conduits, preventing interference in any way with other parts of the car.—Lexington Signal Co., Lexington, Ky.

Tar Remover

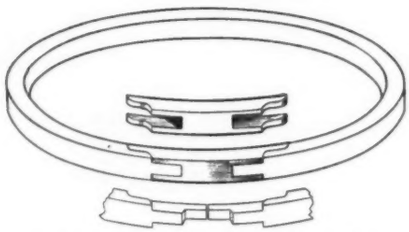
Asphalt or tar if allowed to remain on the car will discolor the varnish and destroy the finish. The directions for use of this tar and oil remover are as follows: After washing the car with soap and water and removing all grit, saturate a piece of cotton waste with the liquid and apply it to the damaged surface. Allow it to stand for a few minutes, and then rub thoroughly with the same piece of waste. Price, per pint, 50 cents; per quart, $1.—Cooper & Osterhout, Watertown, N. Y.

Union Piston Ring

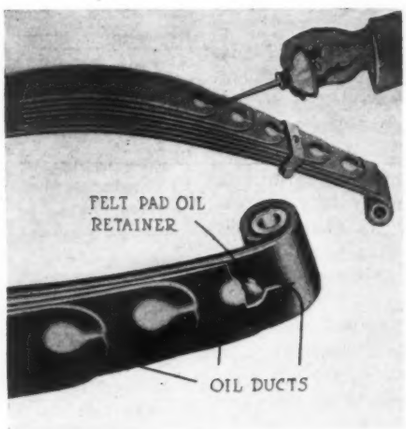
Union rings are especially adapted to the small-bore, long-stroke engine in which good compression is essential to the high speeds necessary. The illustration shows the method of preventing leakage at the joint, the broad surface of the ring coming into direct contact with the cylinder walls and the blades fitting into the piston grooves being protected from breakage, the idea being to provide a perfect metal packing. Union rings are made from individual gray-iron castings, and the scale of the casting is retained in the ring to give maximum resiliency. The rings are ground to exact measurements after the union is inserted to insure a perfect fit. Rings of 2½-in. diameter and under sell for $1; 2½ to 3½, for $1.25; 3½ to 4½, for $1.50; 4½ to 5½, for $1.75, and 5½ to 6½ in. for $2.—Union Products Co., Rockford, Ill.



Rex valveless power tire pump, with hose



Union piston ring, showing the union



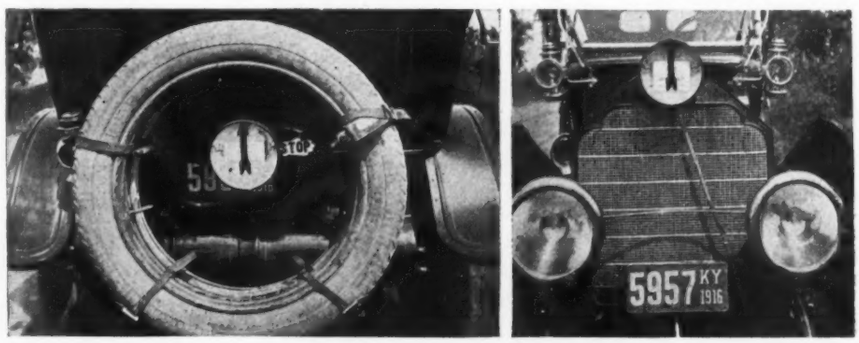
Lyon self-lubricating spring details

Rex Tire Pump

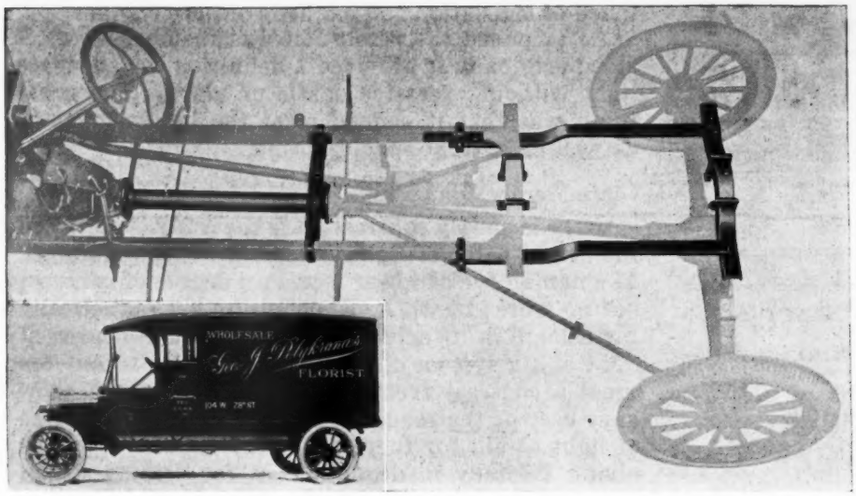
As there are no valves in this single-cylinder pump it may be operated at high speed without impairing its efficiency. The action of the pump shaft gives the piston both a vertical and laterally oscillating movement; in the side of the piston a groove is so located that when the piston starts upward on the compression stroke this groove coincides with the delivery port in the cylinder and remains in that position until the end of the stroke. The piston then oscillates, covering the outlet port and preventing the return of the air. At the end of the downward stroke the piston uncovers the vacuum passages, allowing air to rush into the cylinder. While the piston is traveling down and back over the intake port it is rotating in the cylinder, so that the delivery port is uncovered shortly after the intake port is closed.—Rex Pump Co., Chicago, Ill.

Lyon Self-Lubricating Spring

These springs are designed to use light cylinder oil, sufficient oil for about 3000 miles travel being retained by a felt pad carried in a concavity near the end of each leaf. Oil is reapplied with an ordinary oil can through a small duct from the end of the leaf. In the normal position of the spring there is only a slight pressure on the oil pad, but when running this pressure is varied by the road inequalities so that the pad acts in the manner of a sponge. Very little oil is forced to the outer surface of the pad and this is taken up by the spring leaves



Lexington safety signal, showing the two casings with indicator dial, one attached to the rear and one to the front of the car. Note stop signal



H-D extension for Ford cars, permitting the lengthening of the wheelbase 15 or 30 in. as on car illustrated at left

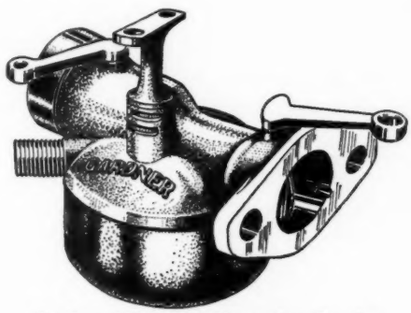
throughout their length by capillary attraction, insuring positive lubrication. The manufacturer carries in stock over 400 different numbers of springs.—Edward F. Lyon Co., Detroit, Mich.

Gardner Thermostat Carbureter

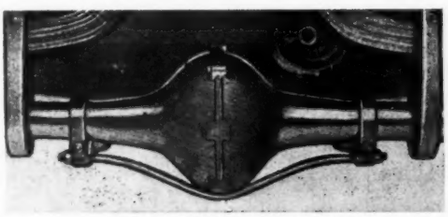
With this carbureter, designed for Fords, the gasoline supply is automatically controlled by means of a metallic thermostat. This thermostat is an integral part of the carbureter and requires no adjustment. It consists of a metal plug at the carbureter termination of the supply line and contains two openings admitting the fuel to the mixing chamber. One of these openings is controlled by the thermostatic flap-valve actuated by the changing temperature. In starting when the motor is cold the valve is open, giving a rich mixture. As the motor warms up the valve closes, giving an economical running mixture. The device sells for $10.—Gardner Carbureter Agency, 680 Woodward Avenue, Detroit, Mich.

H-D Extension for Fords

Simplicity is a feature of this extension, only five parts besides the brake-rod lengthening equipment being required to lengthen a Ford chassis 30 in. There is also a 15-in. extension, but the manufacturers consider the 30-in. type more generally desired. When the chassis has been lengthened it may be fitted with either a delivery or truck body or a seven-passenger touring design. The extension consists of a propeller shaft, tubular propeller shaft housing, a frame extension and the necessary equipment for lengthening the brake rods. The makers state that anyone can attach the device with a wrench and a hammer in a few hours, no boring or machine work being necessary. The extension may be removed at any time and the chassis restored to its original dimensions. Its use is especially advantageous, it is claimed, for fitting a Ford for the delivery of the small parcels which make up the great bulk of retail business. The 30-in. size sells for $60, complete, and the 15-in. size for $55.—Hayes-Diefenderfer Co., 237 West Fifty-fifth Street, New York City.



Gardner Thermostatic carbureter for Fords



Hoyt's axle truss for Fords

Weaver Towing Pole

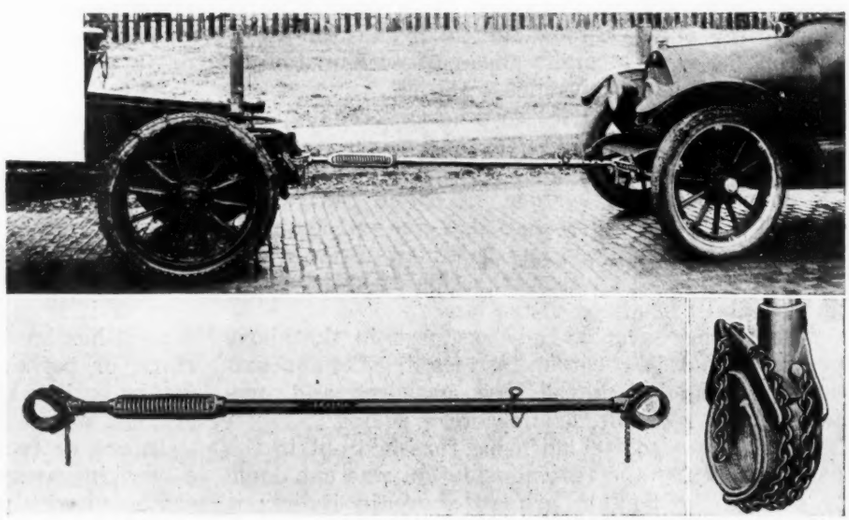
An adjustable-length pole that may be fastened to the front or rear axle of any car, enabling it to be towed with safety. The pole proper is made from steel tubing which is adjustable from 5 ft. 6 in. to 8 ft. by means of a keypin. At each end are metal sockets carrying a 30-in. leather strap that permits attachment either to the axle, spring or frame. The towed car may be pushed backward, cannot jam into the forward car on hills, and all shocks are absorbed by the double-acting spring mounted in the pole. Price, $10.—Weaver Mfg. Co., Springfield, Ill.

Hoyt Axle Truss

With this device the Ford rear axle is strengthened by a steel rod passing under the differential housing and clamped at each end to the rear axle. The device is claimed to take much of the strain from the central retaining bolts and to promote the life of the rear end assembly. It is easily installed and may be bolted in place by the owner. Price, $1.50.—Hoyt's Auto Supply Co., 370 Fairfield Ave., Bridgeport, Conn.

Rub-R-Tite Patch

This is a water-tight patching for tops, side curtains and cushions. After cutting to the desired size, the linen coating is removed from the adhesive side and the patch applied. It is said that the patch is scarcely noticeable. Price, one sheet, 4 by 12 in., 50 cents.—Auto Products Co., 40 Elm Street, Buffalo, N. Y.



Weaver adjustable-length towing pole, its application being illustrated above. Detail of socket is shown at the lower right

The Automobile

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Solving the Glare Problem

AT the January meeting of the S. A. E. the electrical equipment division of the standards committee offered the following resolution:

"Whenever there is not sufficient light within the limits of the highway location clearly to reveal all persons, vehicles, or substantial objects within said limits for a distance of at least 150 ft. the headlights of any motor vehicle in motion shall give sufficient light to reveal any person, vehicle or substantial object on the road straight ahead of such motor vehicle for a distance of at least 150 ft.

"The headlight shall be so arranged that no portion of the reflected beam of light, when measured 75 ft. or more ahead of the lamps, shall rise above 42 in. above the level surface on which the vehicle stands. Such headlights shall also give sufficient side illumination to indicate any person, vehicle or substantial object 10 ft. from the side of such vehicle at a point 10 ft. ahead of the lamps.

"The term 'beam of light' as used in the above provision shall be construed as meaning the approximately parallel focalized rays gathered and projected by a reflector, lens or other device."

When the report came to be threshed out in the general meeting the recommendation was cut down to merely the portion printed above in italics; it being considered by the majority that the original resolution was too sweeping; that it savoured too much of legislation and too little of pure engineering.

As amended the resolution was insufficient, as it stood originally it provided a definition for adequate light without excessive dazzle or glare. The great thing was that it defined what the light *should* be as well as what it should not be.

Glare Merely Contrast

Glare is simply contrast; it is the contrast between the bright patch of light and the dark surroundings. The human eye can bear a certain degree of contrast but no more; the S. A. E. definition goes practically far enough in its original form to define a degree of light and a system of lighting that will prevent too great a contrast from being presented to the ordinary user of the road. It is not a matter of volume of light at all, for there are many small side lamps giving a totally inadequate light for driving which are none the less able to glare horribly.

Unassisted, legislation might take the mistaken course of limiting the amount of light, which would not, of itself, help the glare question, while it would tend to make night driving unsafe by reason of robbing the driver of his power of sight. Too little light is as dangerous as glare to the road user, who may be overlooked altogether if he is not illuminated adequately.

The S. A. E. after modifying the original resolution and so greatly curtailing its value, asked that research work be done so that the resolution could be enlarged, stating in exact terms of scientific accuracy the degree of illumination desirable or necessary. This research work is being done and has been largely accomplished. The society will very soon be able to frame an entirely scientific recommendation which will not only state the amount of light necessary and the way it should be directed, but will tell how that amount of light and how that direction may be obtained.

Body Fashions

IN two years we have seen the average automobile body change from what now seems a rather clumsy assembly of curves and straight lines into a "continuous line" shape. Our automobile bodies today are not really streamline, for to be so they would need to have the largest section in front instead of behind, but all body designers seem to be aiming at the torpedo as the ideal shape.

How long will this craze last? Is it a permanent thing or is it to be succeeded by something altogether different?

In America the extremes of the European body builders have not yet been reached; the streamline type as it is called, can be developed much further than it has been carried. Say that we have a year more, or perhaps two, in which streamline bodies can be built to new designs and actually look different, and the question of what will follow arises.

In one or two instances it is possible to observe a breaking away from the curved plan view outline combined with parallel side elevation. Some of the most lately introduced cars have sharp lines in them, some have actual angles.

Argentine Trademark Law

Register Trademarks Before Cars Are Shipped—Dealer's Protection Needed

BUENOS AIRES, ARGENTINA, Sept. 15—U. S. A. automobile and accessory manufacturers should give early attention to the proper registering of trademarks in Argentina, otherwise they may find themselves barred from the privilege of using their own trade name.

There are certain U. S. A. cars sold in Argentina under different names than in North America and Europe. Their trademarks were registered here by local concerns. There are other concerns that have had to pay fairly large sums of money, well up in the thousands of dollars, to some person who has registered their trademarks in this country and held the matter under cover until cars have reached the custom house in this city. Before the cars were taken out of customs the U. S. A. manufacturer had to make his peace with the party owning the registered trademark.

R. W. Huntington, one of the best known authorities on patent laws and trademarks, etc., in Argentina, has recently written for the *Review of the River Plate*, the leading financial review of this country, a comprehensive outline on the trademark law and practices in connection with it. Mr. Huntington is a member of the American colony here and is a leader in his profession.

There are several points in connection with Argentine patent law which differ so widely from U. S. A. customs that they should be carefully considered. For example, in Argentina a trademark may be held by the registrant even though he may not use it. He can have it as long as he desires before he commences to do business.

Trademark by Class

Then again, if you have a trademark for one class of goods it will give protection for all different classes of goods. If you register it for automobiles it will hold for goggles.

In connection with selling automobiles and accessories here, the Buenos Aires dealer must be protected. To do this the trademark under which your goods are sold should be registered in the name of the Buenos Aires dealer, which can be done with every safety, as outlined later.

The following are some extracts from Mr. Huntington's paper:

"It should be borne in mind that there is a radical difference in the very basis of the trademark law of this country and that of Great Britain and the United States, for example, in which *previous use* counts rather than previous registration, whereas in this country *these conditions are reversed.* This fact is the cause of much of the misunderstanding which has arisen among foreign manufacturers regarding the protection or lack of protection of such marks or names in this country and the conditions affecting such protection.

"In this country a merchant, manufacturer or agriculturalist may choose his distinctive emblem and secure it for himself by registration, even before he commences to do business, where in the United States, for instance, he must actually use the mark before he can register it. For this reason the Argentine law might seem more just to the man about to go into business and less so to the established merchant or manufacturer. It is extremely difficult for the human mind to disabuse itself of all self-interest in judging of the right or wrong of any given law or measure.

"But whatever our opinion may be on this point, we must take the law as it is and not as we may think it should be.

"Another difference between the law of this country and those of some others lies in the fact that here a trade mark or name may be held by the registrant even though he may not use it, or he may hold a mark for many classes of goods while using it for only one. This also, while it may and undoubtedly does seem unjust to the mind of a person accustomed to the opposite conditions, is not without its defense; for instance, why should I lose an emblem which I have invented because I am prevented by financial or other reasons from carrying out my intentions to use that mark for the time being? Or why should I, who have a certain mark which I use to designate some table delicacy, not be able to prevent someone else from using the same mark or a similar one for axle-grease or rat poison? If your trademark is original you should have the right to insist that no one else may use it for anything—that when that mark is mentioned the idea conveyed and received shall be the name of the article for which you have made it famous, and that exclusively.

Trademark Piracy

"It is true that this particular phase of the law and practice here lends itself to what has been called 'trademark piracy' on account of the strictly national interpretation which is given to the law, although there has been a marked improvement since the year 1912, previously to which it was the practice in the Argentine Patent Office to grant the registration of a mark for all classes of goods for a single registry fee. Since that time each one of the twenty-five classes into which the new Argentine classification then adopted divides merchandise for the effects of trademark registration must be

(*Continued on Page* 638)

Freight Car Shortage Serious

Manufacturers Forced to Unusual Methods to Keep Shipments Close to Normal

DETROIT, MICH., Oct. 9—There is a shortage of 100 railroad cars per day in Detroit for automobile shipments. Using flat cars, Arm's palace horse cars, box cars and any other sort of a freight car with a 6-ft. door, manufacturers of automobiles in Detroit and other cities are attempting to meet with the serious shortage of freight cars suitable for transportation of automobiles, and they are finding it a difficult task.

Whether the blame for the shortage belongs to the 213,078 automobiles manufactured this year as compared with 139,829 of 1915, or to the vast grain movements now taking place, or to the delay in unloading of freight cars or, as many maintain, to the shortage in trackage and motive power, is not yet clear, but manufacturers are becoming pessimistic over the outcome and predict that even greater difficulties are sure to arise within the next few months.

Some Cut Production

Interviews with a number of car makers in Detroit disclose that many are now suffering to such an extent that they have been forced to cut down their production. At the Ford plant the traffic department reports that though they are not suffering much as yet, they have been forced to use ordinary box cars and to reload freight cars as soon as they are emptied in order to keep up to normal. Maxwell has been held up on shipments for the past 2 months and has seriously felt the shortage during the last 3 weeks. The company is using any kind of car with a 6-ft. door, and has had to cut down its production because of conditions.

At Packard private cars have been leased to care for the shipments, and up to the present they have been able to cope with the situation. Cadillac has suffered the greatest inconvenience through the Western equipment and, though running light on production at present, has had to use flat cars for the last 2 weeks. Studebaker has had several tie-ups and is shipping about three times as many cars at present as 3 years ago and is attempting to relieve the shortage by loading foreign cars to local points as far as possible. Hudson has leased many private Arm's palace horse cars, which are relieving them for the present, but shipping conditions are constantly becoming worse and take a pessimistic outlook. Many other companies report similar troubles.

Many plans are in process of consid-

eration and operation for the relief of the congestion. There are at present about 9000 railroad cars lying idle in the Detroit freight yards which are filled with household goods belonging to families in this city who have recently moved here and are unable to find apartments or homes in which to live. Every means is being used to have these cars unloaded as soon as possible. The Interstate Commerce Commission, local commercial organizations and the railroads are urging shippers to unload all cars as quickly as they can. The railroads have at the present time 10,000 new automobile freight cars in operation, as compared with a year ago, and have 8000 additional under construction orders, of which 5000 are expected to make their appearance this coming winter.

The railroads are attempting to prevent delay of unloading of cars by means of a higher rate of demurrage which they are trying to establish and which they believe will force shippers to unload. They claim that there should be a progressive charge, making it $1 per day per car for the first 3 days, $3 per car per day for the next 3 days and $5 per car per day for each succeeding day. It is likely that tariffs will soon be filed to cover this schedule.

—

Maibohm to Increase Production

RACINE, WIS., Oct. 5—The Maibohm Motors Co., this city, which began the Maibohm roadster about a year ago, is at present located in a factory of 110,000 ft. of floorspace and is making twelve cars per week.

The Maibohm company is an outgrowth of the Maibohm Wagon Co., which for 30 years has built vehicles. Experimental work on the first Maibohm car was commenced about 2 years ago.

—

Two Detroit Accessory Makers Bankrupt

DETROIT, MICH., Oct. 6.—Bankruptcy schedules, listing liabilities totaling more than $100,000 were filed yesterday in the United States District Court by the Victor Mfg. Co. and Ackerman and McNamara, two Detroit automobile accessory manufacturers.

The Victor Mfg. Co. is a Michigan corporation with its main plant in Detroit. It listed its total liabilities at $77,807 and assets comprising land and machinery at $114,724. The schedule was filed by Franklin T. Chapman, secretary and treasurer of the company. Adjudication was made Sept. 18.

Ackerman & McNamara whose plant is located at 535 Franklin Street, Detroit, listed their total liabilities at $39,606 and assets at $5,201. Adjudication was made August 29. Owners of the company are Joseph Ackerman and Frank McNamara.

Studebaker's Vast Expansion

Many Buildings Erected and Numerous Mechanical Changes Made in Year

DETROIT, MICH., Oct. 6.—This last year has been one of constant construction for the Studebaker Corp. Old buildings have been torn down and new ones added, factory methods have been overhauled and improved, and every feature designed to facilitate production has been adopted wherever possible.

A Year's Growth

Within the past 12 months three buildings have been erected, two structures enlarged and construction on another started. At plants numbers 3 and 4 where the additions are being made, a building 300 ft. long and 50 ft. wide, four stories high and constructed throughout of steel, glass and tile, has been equipped with a traveling crane which serves three floors and places stock directly from freight cars to the proper departments. The building will serve for frame assembling, storage and wheel painting.

The structure in course of erection will be 900 ft. by 50 ft., one story high and will be used for testing, tuning and getting cars ready for shipment.

Another new building consisting of one story 65 ft. by 140 ft. has been added to the heat treating and forging shop and will house work of similar nature. On West Jefferson Street in the same plant, a one-story tuning and testing shop 50 ft. by 350 ft. has been erected and behind it a building has been increased from one to four stories and is used for a forge shop, wheel, rim and tire assembly and frame dip painting. There is also a new heavy forging shop 65 ft. by 265 ft. built entirely of steel, glass and tile.

New Forge Plant

The new building constructed for heavy forging is used for all crank shaft, front axle and connecting rod work. Three new 7000 lb. hammers, three 120-ton hydraulic presses for crank shafts and front axles, and four 2500 lb. hammers for connecting rods have recently been added to the general equipment. The shop is so arranged that all raw materials enter at the north end and are completed and inspected before leaving at the south end. The building is radical in its layout and differs from other plants, as the hammers and presses are ranged along the walls and the furnaces are placed in the center to secure ideal working conditions during the summer months. A 5-ton Toledo trolley crane serves the entire shop which is composed of a complete equipment of twenty-four forging furnaces and 4 Rockwell double chamber heat-testing furnaces.

One mile of new trackage has recently been laid and the Studebaker company can now load 100 freight cars on the company tracks at one time.

A new steel yard with capacity for 300,000 tons of forging steel and 400 ft. long by 65 ft. wide, has been added to the plant and takes the steel directly from freight cars by means of a 5-ton crane. The yard is so arranged that it feeds from the stock piled directly to the shears and to the two shops on each side of it.

Old Buildings Enlarged

The main building constructed 3 years ago has recently added seven forging gear blank headers and much minor machinery. It is 370 ft. by 65 ft. and until this year, was used to do all of the productive work at plants numbers 3 and 4.

An excellent illustration of the growth of the Studebaker Company is shown by the old De Luxe building. When the Studebaker Corp. purchased the site from De Luxe there were several small buildings to the plant. To-day there is but one-half of a De Luxe building left and that is now used in connection with a new structure.

The Studebaker factory operates entirely upon a unit system, and each separate piece is received in the raw in its specified room where it receives every part of the work needed to complete it and does not leave until it has been painted, inspected and made ready for assembly.

Conveyor System Used

Conveyors operate throughout the various shops and carry the parts to the different assembly rooms eliminating all superfluous human movement.

Assembly work is carried on by a progressive plan. The third floor of the main building is filled with shops where parts are finished for assembly and placed in the conveyors to the fourth floor. Here the frame starts at one end of the building, receives its dip of paint and wheels with rims and tires inflated. It is then placed on a power conveyor and carried from room to room and point to point, receiving in each place, the various additional parts it needs, until ready for the top, hood, floor boards and windshield which are placed on after the car leaves the power conveyor.

A one-story building to cost $30,000, will be erected shortly at the South Bend plant. It will be used as a service station, stockroom, display room, and repair shop. Another story may possibly be added later.

Budd Wheel Co. to Enlarge

Will Have 3 Acres of Floorspace in New Body Plant of Budd Mfg. Co.

PHILADELPHIA, PA., Oct. 9—The Budd Wheel Corp., of Philadelphia, recently incorporated for $2,000,000 to manufacture steel and wire wheels of its own design, will occupy part of the new building being erected at Twenty-fifth Street and Hunting Park Avenue by the Budd Manufacturing Co., maker of all-steel bodies.

The new company will have about 3 acres of floorspace in the new building. W. B. Read is secretary and treasurer of both companies.

The new Philadelphia industry will be in charge of Charles Schenck, formerly with the Burdette Roundtree company, and well known in the railroad business. The stock is divided into $1,000,000 preferred and $1,000,000 common stock. Its officers are: Edw. G. Budd, president; H. L. Adams, of Chicago, and director of the Grant Motor Car Co., vice-president; W. B. Read, secretary and treasurer.

The Budd Mfg. Co. is at present turning out 1000 complete bodies a day and to meet the increasing demand for more is erecting the new building.

—

American 2-Tonner for 1917

NEW YORK CITY, Oct. 10—The American Motor Truck Co. has announced its 1917 model, a 2-tonner, equipped with a 36-hp. Wisconsin motor. The company's executive offices are in this city and the factory is in Hartford, Conn.

—

Elgin to Add to Factory

CHICAGO, ILL., Oct. 7—The Elgin Motor Car Corp., this city, which has increased its floor space more than 500 per cent within the past 80 days, will further increase it with an additional 200 per cent before another 60 days.

—

Herschell-Spillman Expands 25%

NORTH TONAWANDA, Oct. 9—The Herschell-Spillman Co., motor manufacturers, this city, is increasing its production 25 per cent by erecting a new building 165 by 65 ft., four stories in height.

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New Stewart-Warner Buildings

BELOIT, WIS., Oct. 7—The large new foundry buildings being erected for the Stewart-Warner Speedometer Corp., Chicago, at the Warner works in Beloit, Wis., require a remarkable volume of materials. The specifications call for more than 1,000,000 brick; 120 tons of steel; 3000 cu. yd. of concrete, and 40,000 cu. yd. of filling ground, in addition to 50,000 panes of glass. The main building will be 122 by 522 ft. in size, and the auxiliary structure is 70 by 80 ft. Between 250 and 350 men will be needed to man the big shop when it is completed early next year.

—

Ford to Build Plant in England

DETROIT, MICH., Oct. 9—The Ford Motor Co. of Detroit states that the Ford Motor Co. of England, a separate corporation, will shortly erect a large plant near Southampton, England, for the production of Ford cars. Construction will be in charge of L. D. Perry who sailed for England on Oct. 6. The general details of the new factory have not yet been arranged and will be planned by Mr. Perry after his arrival.

—

Waupun Co. Builds Bodies

WAUPUN, WIS., Oct. 9.—The J. S. Morris Co., Waupun, Wis., carriages and vehicles, is now specializing in the manufacture of special motor car bodies, such as hearses, limousines, coupés and other types. Several hearse bodies were delivered during last week and orders for similar bodies are on the books and will require maximum production for 5 to 6 months to fill.

—

Chase Truck Makes Changes

SYRACUSE, N. Y., Oct. 7.—The Chase Motor Truck Co., this city, has appointed L. H. Abbott assistant sales manager. Mr. Abbott was formerly manager of the service department.

C. N. Gillette has been transferred to the New York City branch of the company. He was formerly traveling sales representative in the Southern territory.

—

No Trucks at Cleveland Show

CLEVELAND, OHIO, Oct. 9—There will be no trucks in the coming Cleveland automobile show to be held at the coliseum beginning Dec. 30.

The decision, which was announced to prospective exhibitors last week, is believed to mean a greater variety of passenger car exhibits and it is thought will bring more interest to the vast majority of persons attending the show.

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Aprahamian's Sailing Date Was Earlier

NEW YORK CITY, Oct. 7—In THE AUTOMOBILE for Oct. 5 it was stated that A. Aprahamian would sail last Saturday for Africa and the Orient to represent American automobile and acessory companies. This was misleading, as Mr. Aprahamian's sailing date was nearly 2 months ago.

Co-operation Is Open Week Slogan

St. Louis Dealers Work Together To Interest Public in Cars —Some Sales

ST. LOUIS, MO., Oct. 9—Automobile Open Week closed at 10:30 Saturday night. Practically all of the firms who participated call it a success. Joseph A. Schlecht, chairman of the show committee of the Automobile Manufacturers' and Dealers' Assn., says that the effort has proved a very satisfactory substitute for the Fall show, which has been the rule in St. Louis. On two evenings the salesrooms were thronged to capacity and there was a fair daily attendance. Scores of country dealers were on hand.

But the best feature of the week was the spirit of co-operation that was developed. Those members of the association whose salesrooms are not on the row and who could not lease temporary quarters for the week were housed rent free by members who had large quarters. The visitors were permitted to bring their salesforces to the hosts' salesrooms and place their swinging signs on the fronts of the buildings. Also most of the dealers kept an automobile in front of their stores and should a visitor, after looking over the cars displayed there, express a wish to see another car, the car was placed at his disposal.

All Co-operate

There also was an agreement as to signs, all being exactly of the same design and stating only: Shown Here—name of car—and below: Open Week, 1916.

Two parades were given, each car carrying a card giving its name and price. This parade toured the principal part of the city and by noon reached the fair grounds where the machines were parked for the afternoon in a special space set apart. On Thursday afternoon the attendance at the fair was given as 30,000 and practically all of them looked over the cars.

Some Sales Made

There was some business done, cars being sold mainly to prospects brought to town by country dealers and who insisted on driving their new cars home. Other visitors who were greatly appreciated were out-of-town folk who came alone to see cars and then inquired how soon their local dealer could get this or that model.

The real occasion for Open Week is this: For 39 years a mysterious organization has given each year during the first week in October an illuminated parade called the Veiled Prophet.

This has drawn thousands of visitors to town and when the first automobile show was organized this week was selected because of the many out-of-town visitors. Recently there has been an agricultural fair the same week. This fair is new and is handicapped by a lack of buildings, so the fall show could not be held there and this year the dealers wanted to get into the national circuit, so they decided upon the choice of Open Week.

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Perfex Radiator Erects New Plant

RACINE, WIS., Oct. 7—The Perfex Radiator Co., Racine, Wis., one of the largest manufacturers of pleasure and commercial car and tractor radiators and cooling systems in the Middle West, on Oct. 9, began operations in its new factory at Holmes and Fleet Avenues. The new shop was dedicated on Saturday evening, Oct. 7, with a social party for employees and their families and friends. The factory is 75 by 255 ft. in size, and considered a model of factory lighting and sanitation. The capacity is increased to 400 radiators a day by the improvement. The Perfex company was established in Racine about 4 years ago and has met with much success. At present its orders are of such volume as to insure a continuous capacity run until the end of next year. More than 150 skilled men are employed at this time. The new plant represents an investment of $45,000 to $50,000. Officers of the concern are: President, F. M. Opitz; vice-president and treasurer, E. P. Wolf; secretary, J. P. Wolf.

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U. S. to Mark Mojave Desert

DETROIT, MICH., Oct. 9—Following efforts of good road enthusiasts for the past fourteen years, the government has just appropriated $10,000 for the erection of sign posts to water holes in the Mojave desert. The desert has recently been traversed from the east by many auto drivers who found traveling comparatively easy but complained of the need of water hole direction signs. The plan adopted by the government is not only to mark the highways but to also designate water supplies clearly and to keep them free from pollution as far as possible.

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Tractors Were of Latil Make

NEW YORK CITY, Oct. 7—The makers of the Latil tractor have written saying that in THE AUTOMOBILE for Aug. 24, on page 311, and again on page 314, the two illustrations which were stated to be Renault tractors were Latil machines. The Latil tractor was one of the first made in France and is one of the most successful. The French army is using many Latil and also many Renault tractors.

N. A. A. A. J. Remedies Trade Evils

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Sixteen-Month-Old Organization Holds Successful Convention in St. Louis

ST. LOUIS, MO., Oct. 6—The most successful convention of the National Assn. of Automobile Accessory Jobbers closed here to-day. It had a larger attendance, there was more enthusiasm and greater progress was made than at any session held in the brief career of the organization. The growth of the association is phenomenal so far as the automobile trade is concerned, for it has attained national proportions in 16 months.

Throughout the session there was evidence of a better spirit of co-operation. Members seemed disposed to work together for the common good and standards of practice were accepted upon a vote of the majority.

Trade Abuses Discussed

There were no idle addresses and little time was wasted under the direction of Commissioner William M. Webster. According to the system followed abuses in the trade are taken up, are discussed, referred to a committee, the committee's recommendation is discussed and action follows.

Monday and Tuesday were devoted to meetings of committees and directors and open sessions for all members were held Wednesday, Thursday and to-day. The entertainment program included a theater party Monday evening, attendance at the Veiled Prophets Parade Tuesday evening, a luncheon by the Business Men's League Wednesday, an automobile ride for women visitors Thursday to Shaw's Botanical Gardens, a banquet at the Sunset Inn Country Club, Thursday, given by the Curtis Pneumatic Machine Co., the McQuay-Norris Mfg. Co. and the Shurnuff Mfg. Co., a shopping tour Friday morning for the women, and a golf tournament Saturday.

An address on Business Co-operation was made Wednesday by Charles Nagel, former Secretary of the Interior, and H. G. Wilson, Traffic Commissioner of the Toledo Commerce Club, discussed Traffic and Transportation.

New Members

Thirty-four manufacturing members were admitted and 10 jobbing members. The jobbers' list is augmented by these members and by the Auto Supply Co., of Milwaukee.

The standards of practice set up will make much for the accessory trade. The principal recommendations follow:

The practice on the part of newspapers of using a car distributor as bait for participation in a blanket ad by the distributors' dealers was condemned.

Following an address by J. C. Thorpe, of the National Automobile Trade Assn., it was voted to work for greater co-operation with the retail organizations.

A committee was formed to investigate overhead expense.

Manufacturers were urged not to place excessive guarantees upon their goods.

Further emphasis was placed on the advisability of charging 10 per cent on returned goods.

The car manufacturer was taken to task for buying more accessories than he needs for car equipment and disposing of them at low prices to his branches and dealers. Trade directory publishers were urged to co-operate with the jobbers in compiling jobber's lists.

Jobbers were urged not to supply catalogs to dealers because this often enables the dealers to secure jobbing prices and he thereupon is able to sell at a figure so low that it upsets the trade.

Standardization of shipping and packing was urged and it was recommended that there be a movement among manufacturers toward small shipping units. Manufacturers were requested not to give prizes to the salesmen of jobbers, because this tends to upset the jobbers' regular business.

The committee on assisting the trade presented plans for the uplift of the retail division of the industry and was authorized to spend $1,000 in advertising.

A telegraph code was adopted.

It was suggested that manufacturers, when the goods are salable, repurchase bankrupt stocks and prevent the market being flooded with standard goods at ruinously low prices. It was the sense of the meeting that rebates should not be allowed to dealers.

On the question of payment of bills, dealers were urged to conform to the terms of the purchase agreement regardless of whether there is a cash discount, and manufacturers were urged to put their business on a more or less uniform discount basis.

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Auburn Adds Four-Story Building

AUBURN, IND., Oct. 9—Work has been started on a four-story building for the Auburn Automobile Co. The building will be constructed of cement block and brick. The contract calls for its completion Nov. 1.

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Mail Driver Must Obey the Law

BOSTON, MASS., Oct. 7—It cost Roland S. Ford, driver of a United States mail wagon, $10 in court to learn that he was not exempt from the automobile laws at Boston yesterday, and before the Highway Commission gets through with his case next week, when he has a hearing,

he may find his privilege to drive has been revoked. Ford has been driving a motor truck owned by the Boston Delivery Co., but leased to carry mail, and while going along Boylston Street, where it was muddy, he seemed to delight in creating splashes. The judge found him guilty of driving his machine in an unreasonable manner and refusing to show his license to the policeman, and he was fined $5 on each count. The Highway Commission was notified, and Ford has been summoned before that board for a hearing.

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Hood Bureau Increases Scope

DETROIT, MICH., Oct. 10—The Wallace C. Hood Service Bureau, this city, has increased its scope by securing agencies for dealers, by assisting the dealer or manufacturer in solving merchandising problems, analyzing territorial conditions, obtaining executives or workmen, and acting in an advisory capacity.

F. M. Eldredge has recently become associated with the Hood bureau of Detroit in the capacity of director of the bureau's advertising and publicity divisions. Mr. Eldredge will continue his present connection with various large industrial concerns as manager of their publicity departments.

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Thirty-three Entries for Chicago 250-Mile Race

CHICAGO, ILL., Oct. 10—Special Telegram—Thirty-three entries have been made for the 250-mile Grand American Automobile Race in this city next Saturday on the Speedway. Additional nominations are expected in later mails. All the prominent drivers and cars are included except the Sunbeams.

The race will probably settle the A.A.A. championship, as Aitken, Resta, Rickenbacher and DePalma are very close. As the winner of Saturday's race will be credited with 800 points, any one of the four to win will take the championship. Practice begins today.

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Giesel Federal Truck N. E. Sales Mgr.

DETROIT, MICH., Oct. 6.—A. A. Giesel after an absence of 3 years returns to the Federal Motor Truck Co. as New England sales manager.

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Dynamometer Set for U. of Wis.

MADISON, WIS., Sept. 23—An electric dynamometer and a gas engine manograph have been installed in the steam and gas laboratory of the college of engineering, University of Wisconsin, for experimentation with various gasoline engine manufacturers of Wisconsin. The dynamometer has a capacity of 150 hp. at from 2200 to 3500 r.p.m.

125,524 Cars in Bay State

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$1,118,981 Fees for First 9 Months of Year—452 Makes

BOSTON, MASS., Oct. 7—The demand for registrations for motor cars continues to increase so that now the figures show a continual gain over other years. Despite the fact that those who waited until Oct. 1 could register their machines at half price very few waited.

For the first 9 months of 1916 the Highway Commission received $1,486,000. For the entire year of 1915 the receipts were $1,118,981, so there is little doubt but what the $1,500,000 mark will be reached this year as prophesied early in the year. The total number of registration certificates issued for the 9 months of this year reached 125,524. According to the figures compiled by the New England Auto List officials the cars were listed as follows:

Ford	27,895	Little	105
Buick	8,169	Allen	104
Overland	7,333	Baker	95
Cadillac	5,805	Case	92
Studebaker	4,329	Warren	92
Hudson	3,962	Elmore	91
Maxwell	3,726	Trumbull	91
Packard	3,026	Renault	85
Dodge	2,811	Michigan	78
Chalmers	2,660	Moon	75
Reo	2,285	Speedwell	72
Metz	2,139	Westcott	71
Chevrolet	1,631	Crawford	69
Pierce	1,594	Rauch-L.	67
Oakland	1,588	Dort	66
Hupmobile	1,291	Autocar	64
Jeffery	1,239	Selden	62
Oldsmobile	1,183	Waverley	62
Stevens	1,093	Amer. Loco.	60
Chandler	943	Cartercar	60
Franklin	915	Palmer Singer	56
Paige	707	Flanders	55
Stearns	889	Brush	52
Saxon	816	Henderson	45
Stanley	750	Moline	45
Peerless	726	Paterson	43
Mitchell	722	Marathon	41
Pope	692	Berkshire	40
Winton	679	Lexington	40
Jackson	656	Atlas	39
Regal	559	Pathfinder	38
Locomobile	531	Bergdoll	37
Cole	519	Briggs	37
Velie	500	L. P. C.	37
E. M. F.	478	McFarlan	37
White	478	Motor Car	36
Haynes	428	Daimler	35
National	405	Nyberg	35
Kissel	400	Ohio	35
Stutz	397	Herreshoff	33
Dayton	364	S. G. V.	33
Knox	355	Marquette	31
Nordyke	317	Crow	30
Scripps-Booth	299	Hollier	30
Mercer	269	Grant	29
Premier	254	Corbin	27
Grant	235	Woods	27
King	231	Clarke	26
Lennox	227	Lancia	26
Lozier	212	Matheson	25
Inter-State	204	Elkhart	24
Fiat	199	De Tamble	23
R. C. H.	190	Penn	23
Krit	168	Davis	22
Pullman	160	Garford	22
Anderson	156	Lyons	22
Simplex	155	Elec. Veh.	21
Apperson	150	Herff Brooks	21
Empire	144	Napier	21
Amer. Mot.	142	Pilot	21
Abbott	140	Babcock	20
Thomas	123	Courier	20
Everitt	122	Detroit	20
Marion	122	Moyer	20
Briscoe	121	U. S.	20
Columbia	116	Daniels	19
Imperial	116	De Dion	19
Auburn	115	Monroe	19
Bailey	110	Mutual	19
Vulcan	19	Hotchkiss	9
Consolidated	18	Isotta	9
Millburn	18	Gen. Mot.	8
Am. Voiturette	17	Linscott	8
Owen	17	Buffalo	7
Acme	16	Cunningham	7
Berg	16	Enger	7
Columbus	16	Flint	7
Cutting	16	Gen. Veh.	7
Mercedes	16	Henry	7
Parry	16	Mora	7
Weld	16	Willy	7
Cameron	15	B. C. K.	6
Royal	15	Carhartt	6
Easton	14	Darracq	6
Partin	14	Itala	6
Royce	14	Panhard	6
Schacht	14	Stevens	6
Havers	13	Whiting	6
Johnson	13	Bay State	5
Lion	13	Car-Nation	5
Republic	13	Chadwick	5
Sampson	13	Delaunay	5
Standard	13	Hendee	5
Bell	12	International	5
Sears	12	Knight	5
United	12	Lorraine	5
Buckeye	11	Pickard	5
Fostine	11	Rocket	5
McIntire	11	Wayne	5
Argo	10	18 mfrs. each 4	72
Amer. Cycle	9	16 mfrs. each 3	48
Austin	9	47 mfrs. each 2	94
Detroiter	9	169 mfrs. each 1	169

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Wilson, of Redden, Gets Michigan

DETROIT, MICH., Oct. 9—C. Edward Wilson, at present Detroit manager for the Redden Motor Truck Co., has been appointed to control Michigan and other territory for the Redden trucks.

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Ramsden Is Oakland Branch Manager

DETROIT, MICH., Oct. 4—J. H. Ramsden has been appointed to succeed E. J. Kilborn as manager of the wholesale branch of the Oakland Motor Car Co. in Chicago. Mr. Ramsden joined the Oakland organization a few months ago. He was previously prominently connected with the farm machinery industry of the Middle West and for the two years before his association with the Oakland company he was manager of the St. Louis branch of the J. I. Case Plow Works.

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Leach Gets King and Dort

LOS ANGELES, CAL., Oct. 7—The Leach Motor Car Co. has bought out the English Motor Car Co., and will handle the King and the Dort cars on the coast. The cars will be marketed through the former English company's organization, which has been continued practically intact by the Leach company.

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Makes Industrial Moving Pictures

NEW YORK CITY, Sept. 23—The Animated Advertising Corp. of New York is preparing for manufacturers moving picture films of their products in use and syndicating these films through a large chain of moving picture theaters. A number of films have been prepared for manufacturers of automobile commodities who are clients of the Animated Advertising Corp.

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Machine Tool Makers Add

MILWAUKEE, WIS., Oct. 7 — The Kearney & Trecker Co., manufacturing mining machines and other machine tools, is building a new smithing shop and otherwise increasing its capacity.

Globe Business Gains 40 %

Machine and Stamping Co.'s Output 1000 Boxes Per Day —Adds to Plant

CLEVELAND, OHIO, Oct. 5.—The Globe Machine and Stamping Co., this city, maker of tool and battery boxes, of which its output is now about 1000 boxes per day, reports a 40 per cent increase in business during 1916, the total business amounting to $600,000, or 100 per cent better than 1914. This company also manufactures hose clamps and universal joint cover clamps for the automobile trade as well as a line of special stampings and pressed metal parts to order, the latter amounting in volume to about $1,000 worth per day.

Additions Planned

The present factory now contains 80,000 ft., having recently been enlarged by a second-story added to the tool box building, 165 by 100 ft. New machinery has been installed during 1916 valued at $20,000. The company this year has also bought an acre of land near its factory, and is now adding a brick and concrete construction materials storage building. The ground floor of this building will contain about 10,000 sq. ft. Space is reserved around the sides of the plant for an L-shaped factory to be erected later, each wing of which will be about 200 by 60 ft., three or four stories in height.

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Colfax Mfg. Buys Top Co.

SOUTH BEND, IND., Oct. 7—The Frederick W. Loomis Co., manufacturer of automobile tops, has been bought by the Colfax Mfg. Co., this city.

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Business Good in Texas Despite Low Cotton Crops

DETROIT, MICH., Oct. 5—The automobile and accessory business has been excellent throughout the State of Texas despite a cotton crop that is two-thirds of the usual quantity, according to G. F. Bischof of Brownwood, Tex., who is at present in Detroit on matters in connection with the automobile business in which he is interested.

"The farmers have gone into the growing of wheat and oats and the raising of sheep and goats," said Mr. Bischof, "and by this means have more than offset the low cotton crop. My county had 445 Ford cars last year and has added more than 500 in the past twelve months."

The Ford agent in Brownwood is sold up to Jan. 1 and has refused to take additional orders until he fills those now on hand.

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McGraw Tire Capital Increased by $1,000,000

EAST PALESTINE, OHIO, Oct. 7—The McGraw Tire & Rubber Co. at stockholders' meeting increased its capital stock from $3,000,000 to $4,000,000. One million dollars of the new preferred has been underwritten by the M. H. Murch Co., Cleveland. Present outstanding issue of $475,000 preferred is being redeemed in full by payment at par and premium of $10 per share.

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Anderson Steam Vulcanizer Co. Formed

CINCINNATI, OHIO, Oct. 7—The Anderson Steam Vulcanizer Co., has been incorporated with $100,000, to manufacture steam vulcanizers. Incorporators are: Edward D. Woodward, Newton M. Anderson, Wm. D. Schwarting, Eugene Schmidt and J. C. Wells.

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Market Changes Slight

NEW YORK CITY, Oct. 10—Market prices remained for the most part unchanged last week. Activities in the metals, as usual, were mainly on future sales, spot sales being very scarce. The only product affected by the submarine incident was rubber, Para going up 1 cent a lb., while Ceylon rose 4 cents for the week and 2 cents yesterday. Tin naturally rose on news of the sinking of certain ships, its price going up to $43.00 yesterday, or $3.62 per 100 lb. for the week. The rest of the materials were steady in prices.

Daily Market Reports for the Past Week

Material	Tues.	Wed.	Thur.	Frl.	Sat.	Mon.	Week's Ch'ge
Aluminum, lb.	.61	.61	.61	.61	.61	.61	...
Antimony, lb.	.11	.11	.11	.11⅛	.11¼	.11¼	.00¼
Beams and Channels, 100 lb.	2.87	2.87	2.87	2.87	2.87	2.87	...
Bessemer Steel, ton	45.00	45.00	45.00	45.00	45.00	45.00	...
Copper, Elec., lb.	.28½	.28½	.28½	.28½	.28½	.28½	...
Copper, Lake, lb.	.28½	.28½	.28½	.28½	.28½	.28½	...
Cottonseed Oil, bbl.	10.75	10.90	11.00	11.10	11.40	11.25	+ .50
Fish Oil, Menhaden, Brown, gal.	.58	.58	.58	.58	.58	.58	...
Gasoline, Auto, bbl.	.22	.22	.22	.22	.22	.22	...
Lard Oil, prime, gal.	1.08	1.08	1.08	1.08	1.08	1.08	...
Lead, 100 lb.	7.25	7.25	7.25	7.05	7.05	7.05	— .20
Linseed Oil, gal.	.82	.82	.82	.82	.82	.82	...
Open-Hearth Steel, ton	45.00	45.00	45.00	45.00	45.00	45.00	...
Petroleum, bbl., Kans., crude	.90	.90	.90	.90	.90	.90	...
Petroleum, bbl., Pa., crude	2.40	2.40	2.40	2.40	2.40	2.40	...
Rapeseed Oil, refined, gal.	.90	.90	.90	.90	.90	.90	...
Rubber, Fine Up-River, Para, lb.	.72	.71	.71	.71	.72	.73	‡ .01
Rubber, Ceylon, First Latex	.60	.60	.60	.61	.62	.64	‡ .04
Sulphuric Acid, 60 Baume	1.50	1.50	1.50	1.50	1.50	1.50	...
Tin, 100 lb.	39.38	39.63	39.88	39.88	39.88	43.00	+3.62
Tire Scrap, lb.	.06	.06	.06	.06	.06	.06	...

Security Price Decline

Submarine Incident Affects Prices—Unlisted Motors Show Largest Losses

NEW YORK CITY, Oct. 10—A period of liquidation set in on Monday at the Stock Exchange and Curb when news of the U-boat raid was received. Those selling short reaped a rich harvest on some of the automobile issues, whose recessions ranged from a fraction to 30 points. Goodyear Portage Rubber, Ajax and Paige-Detroit, were the only stocks out of nearly forty to withstand the heavy selling pressure and to come out with substantial gains.

An interesting point is brought out by the study of a few of the stocks and how they acted on the submarine news. Willys-Overland, for instance, under heavy buying pressure, had declined nearly 2 points before the news was announced. But instead of violently breaking on a declining market, the issue held steady and marked only a small loss for the week. This was also true of other issues on the Stock Exchange, especially Maxwell and Studebaker. In the Lusitania panic Studebaker went all to pieces, but yesterday it only declined 4 points.

Unlisted automobile and accessory issues did not act so well. Chevrolet declined 8 points, and Springfield Body 6 points.

Several of the issues on the Exchange, however, showed unusually large declines. These issues are selling at high prices and holders were for the most part heavily covered. General Motors common broke 30 points to 690; Chalmers dropped 15 points to 130; Packard went down 10 points; and Firestone Tire 10 points to 1120.

Several new issues will make their appearance on the Curb, these being Harroun Motors and Enger Motor Co. The latter company has listed 300,000 shares, par value $10.

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Casing Head Gasoline Production Increased 53% Over 1914

WASHINGTON, D. C., Oct. 7—The production of raw gasoline from gas during the last calendar year increased 53 per cent over 1914, the casing head gasoline industry extracting 65,364,665 gal. of raw gasoline, a gain of 22,712,033 gal. An average price of 7.9 cents a gal. was received for the unblended product.

It is estimated 24,000,000,000 cu. ft. of natural gas was utilized in the manufacture with the average recovery of 2.57 gal. of gasoline per 1000 ft.

Oklahoma led in production, with more than 45 per cent of the total. Califor-

nia, West Virginia, Pennsylvania, Ohio and Illinois followed.

Gasoline Extracted from Natural Gas and Sold in 1915

State	Number of plants	Quantity (gallons)	Value	Average recovery of gasoline per 1000 cubic feet (gallons)
Oklahoma	63	31,665,991	$2,361,029	3.60
California	20	12,835,126	975,397	1.60
West Va.	114	*10,853,608	927,079	2.30
Pennsylvania	139	*5,898,597	569,873	2.73
Ohio	50	2,198,715	167,138	2.80
Illinois	16	1,035,204	80,049	2.29
Texas	1			
New York	4			
Louisiana	2			
Kansas	2	*877,424	70,258	1.32
Colorado	2			
Kentucky	1			
	414	65,364,665	$5,150,823	2.57

*Includes gasoline resulting from natural condensation in gas mains.

Dividends Declared

United States Rubber Co.; quarterly of 2 per cent on first preferred and 1½ per cent on second preferred, payable Oct. 31 to holders of record at noon Oct. 14. No action on common dividend.

Cole Motor Co.; 3 per cent, making a total distribution in 1916 of 23 per cent.

Falls Motor Corp., quarterly of 1¾ per cent, on preferred, payable Oct. 15 to stock of record Oct. 1.

Kelly-Springfield Tire Co.; quarterly of 4 per cent on common, payable Nov. 1, 1916, to stock of record Oct. 16.

Reo Motor Car Co.; 10 per cent cash, payable Nov. 1; declaration of dividend delayed 2 weeks on account of consolidation of Reo car and Reo truck.

Harroun To Build 24,000 Cars

Company Will Make Its Own Motors and Trim Its Upholstery

DETROIT, MICH., Oct. 6.—Directors of the Harroun Motor Co. entertained citizens of Wayne at the Detroit Athletic club Monday evening. The dinner was attended by nearly fifty in all, including a number of Detroit newspaper men. John Guy Monihan, president of the Harroun company, acted as toastmaster at the dinner.

The Wayne officials told of their plans to house the workmen and to accommodate the company in every manner possible, and officials of the Harroun company outlined the progress made in the formation of the company and its financing. It became known that the entire capital covering an output of 24,000 cars for the first year is in hand, the stock of the company being underwritten in New York. Plans for the building of a large addition to the Prouty & Glass Carriage Co. plant, which the Harroun company has purchased, were revealed. It was also made known that the company will build its own motors and trim its own bodies.

Bernhardt and Hacquebart Join Harroun

DETROIT, MICH., Oct. 9—H. O. Bernhardt, for 2 years production manager of the Pierce-Arrow Motor Car Co., Buffalo, has become production manager of the Harroun Motors Corp. Peter Hacquebart has resigned as construction engineer of the Maxwell Company to take charge of the Harroun building operations.

His first duties will include the erection of an addition to the Prouty & Glass plants now standing in Wayne. This addition will be 130 ft. by 900 ft. in size and will be one story high. It will be used for progressive assembly, store room and motor factory and will thus allow the use of the Prouty & Glass plant for the painting and upholstering of bodies.

Hupmobile Visits Half the Capitals

DETROIT, MICH., Oct. 6.—The Hupmobile capital-to-capital car has passed through Bismarck, N. D., ticking off 5918 miles of the 20,000 mile journey and with one-half of the capitals visited but only one-quarter of the journey completed.

The one big delay encountered was between Pierre and Bismarck when the tourists met with a fog that made pathfinding extremely difficult. Visits are now scheduled for Boise, Idaho, and Seattle, Wash.

B. F. Goodrich Co. Gross Sales May Reach $77,000,000

NEW YORK CITY, Oct. 10—A total over-turn this year of $77,000,000 may be reached by the B. F. Goodrich Co., Akron. Actual shipment of products for the 8 months ending Sept. 1 amounted

Automobile Securities Quotations on the New York and Detroit Exchanges

	Bid	Asked	Net Ch'ge
Ajax Rubber Co	63½	65	+ ½
J. I. Case T M. Co. pfd	82	88	—1
Chalmers Motor Co. com	130	145	—15
Chalmers Motor Co. pfd	95	99	..
*Chandler Motor Car Co	104	106	—1
Chevrolet Motor Co	190	194	—8
Fisher Body Corp	39	42	—1½
Fisk Rubber Co. com	90	105	—7
Fisk Rubber Co. 1st pfd	110	120	..
Fisk Rubber Co. 2d pfd	100	110	..
Firestone Tire & Rubber Co. com	1120	1140	—10
Firestone Tire & Rubber Co. pfd	110	111	..
*General Motors Co. com	690	750	—30
*General Motors Co. pfd	126	127	— ½
*B. F. Goodrich Co. com	72⅜	72⅝	—1⅛
*B. F. Goodrich Co. pfd	113¼	114½	— ¼
Goodyear Tire & Rubber Co. com	296	298	+1
Goodyear Tire & Rubber Co. pfd	107	108	+ ¼
Grant Motor Car Corp	8¾	10	— ¼
Hupp Motor Car Corp. com	5¼	6	— ¼
Hupp Motor Car Corp. pfd	80	100	..
International Motor Co. com	3½	5	—1½
International Motor Co. pfd	15	25	—3
*Kelly-Springfield Tire Co. com	79½	80½	—2
*Kelly-Springfield Tire Co. 1st pfd	98	99	..
*Lee Rubber & Tire Corp	43½	44	—2¼
*Maxwell Motor Co. com	90	90½	—3
*Maxwell Motor Co. 1st pfd	86⅛	86½	—1⅝
*Maxwell Motor Co. 2d pfd	56½	57	— ½
Miller Rubber Co. com	230	230	—20
Miller Rubber Co. pfd	104	106	..
Mitchell Motor	64	66	..
Packard Motor Car Co. com	165	185	—10
Packard Motor Car Co. pfd	95	98	—2
Paige-Detroit Motor Car Co	36	38	+2½
Peerless Truck & Motor Corp	23½	24½	—1
Portage Rubber Co. com	173	174	+3
Portage Rubber Co. pfd	173	174	+3
Regal Motor Car Co. pfd	17	22	..
Reo Motor Car Co	44½	46	— ¾
Republic Truck	67¼	69	..
Saxon Motor Car Corp	77¾	78⅞	—1½
Scripps-Booth	52	55	..
Springfield Body Corp. com	90	100	—6
Springfield Body Corp. pfd	120	135	—5
Standard Motor Construction Co	7½	8¼	—1
Stewart-Warner Speed. Corp. com	113	117	—1
Stewart-Warner Speed. Corp. pfd	..	..	..
Stromberg	38½	39	..
*Studebaker Corp. com	131½	132	— ½
*Studebaker Corp. pfd	109¼	111	— ¼
Stutz Motor	66	67	..
Swinehart Tire & Rubber Co	85	90	—5
United Motors Corp	62½	62¾	—3½
*U. S. Rubber Co. com	58⅛	58½	—3⅛
*U. S. Rubber Co. pfd	113¾	114¼	..
White Motor Co	55	55½	— ¼
*Willys-Overland Co. com	43¾	44	—2¼
*Willys-Overland Co. pfd	102¼	103	— ⅞

*At close Oct. 9, 1916. Listed New York Stock Exchange. Quotations by John Burnham & Co.

OFFICIAL QUOTATIONS OF THE DETROIT STOCK EXCHANGE

ACTIVE STOCKS

Auto Body Co	41	43½	..
Chalmers Motor Co. com	..	135	..
Chalmers Motor Co. pfd	..	101	..
Continental Motor Co. com	37	37¾	+1
Continental Motor Co. pfd	9½	10½	..
Ford Motor Co. of Canada	326	340	+1
General Motors Co. com	710	780	+10
General Motors Co. pfd	126	130	+1½
Maxwell Motor Co. com	91½	94½	— ½
Maxwell Motor Co. 1st pfd	86	89	— ½
Maxwell Motor Co. 2d pfd	56½	59½	+ ½
Packard Motor Car Co. com	..	184	..
Packard Motor Car Co. pfd	100	102	..
Paige-Detroit Motor Car Co	37½	38½	+1½
W. K. Prudden Co	49	51	..
Reo Motor Car Co	44	44¾	—1⅛
Studebaker Corp. com	133½	136½	+2
Studebaker Corp. pfd	107	..	..
C. M. Hall Lamp Co	28	30	+1

INACTIVE STOCKS

Atlas Drop Forge Co	..	33	..
Kelsey Wheel Co	55	60	..
Regal Motor Car Co. pfd	18	..	..

approximately to $50,000,000, a gain of 40 per cent over the same period of last year, or stated in terms of 1915's total sales, the volume of goods billed to customers in the first two-thirds of 1916 was within $5,400,000 of gross sales for all of the 1915 year, up to that time high record. If the company can hold this 40 per cent gain, the total turn-over is expected to be reached.

In 1912 Goodrich did a gross business of $37,533,000.

—

Tractor Show for Kansas City

DETROIT, MICH., Oct. 9—The Kansas City Tractor Club is completing arrangements for the tractor display to be held during the same week of the Kansas City automobile show. Many new tractors will make their first appearance at the coming exhibition.

—

Republic Truck on Transcontinental Run

DETROIT, MICH., Oct. 5—A 1500-lb. Dispatch model of the Republic Motor Truck Co., started from this city today on a transcontinental run. The truck is driven by Lester Peyer and the run will last 6 weeks.

—

Perfection-Stanweld Merger

(*Continued from page* 597)

1906 on a capital of $100 and was formed by Christian Girl and M. M. McIntyre. Five years later it was doing a gross business of $209,310 and 5 years after that its gross was $1,645,829. That was for the year ending June 30, 1915. For the year ending June 30, 1916, the gross business amounted to $3,200,000 and its net earnings for the first 9 months of the fiscal year was $282,811.

The Standard Welding Co. which makes steel tubing, rims for vehicle wheels, motorcycle and bicycle parts, motor vehicle rod assemblies and heaters, and does job welding, was incorporated in 1899. The company employs 2500 men and has a yearly output of approximately 50,000,000 ft. of tubing and 1,000,000 rims and bands. It is expected that the output of the combined concerns will be the same as the output of the present companies.

Officers of the Perfection Spring Co. are Christian Girl, president and general manager; E. W. Farr, vice-president; P. A. Connelly, secretary; T. E. Borton, treasurer. They together with F. F. Prentiss, C. C. Bolton and W. R. Clymer make up the board of directors.

C. W. Bingham is the president of the Standard Welding Co., H. P. McIntosh, vice-president and treasurer, and J. H. Champ, secretary. The board of directors comprises the officers and H. P. Bingham, H. P. McIntosh, Jr., C. C. Bolton and D. S. Blossom.

Giant's Despair Won by Chalmers

—

Junk, Pike's Peak Winner, Takes Free-for-All—H. A. L. Second—Other Events

WILKES-BARRE, PA., Oct. 7.—Fred Junk, winner of one of the events in the Pike's Peak hillclimb this year, captured the free-for-all event in the Giant's Despair hillclimb to-day by driving a Chalmers up the steep mountain course in 1 min. 41 sec., the best time over the course for the day. With this victory went the John Welles Hollenback trophy, that has been held by the Knox Automobile Co. since the Giant's Despair climb was abandoned several years ago.

An H. A. L., driven by Turcotte crowded Junk for the free-for-all honors, his time being 1:45 3-5. Third honors went to Hughson, in a Pathfinder, his time being 1:47. Dalton, driving a Packard, was fourth, covering the course in 1:50 2-5. Emerson, at the wheel of an S. S. E., a Philadelphia entry, took fifth place with a time of 1:57 2-5. Zwally, driving a Stutz, was sixth, his time being 2:10. Haines of Philadelphia, in a Mercer, came in seventh in 2:15 3-5.

In the opening event a Saxon car, the only one entered, developed engine trouble and was disqualified. In event No. 2, Durham, driving a Maxwell, went over the course for first place in 1:50. Junk crowded him close, and C. J. Rogers, of Philadelphia, driving a Lexington, finished fifth; time, 2:56 3-5. A Mercer, driven by Haines, captured the third event in 1:49. Durham, in a Maxwell, was second, and Emerson, driving an S. S. E., was third. Time, 2:05 3-5.

Forty thousand people were on the course when the races started. More than 4000 automobiles were parked along the mountain road. Despite the large crowd, not an accident of any kind occurred. The summary follows:

SUMMARY OF EVENTS

Event No. 1

Car and Driver	Time
Saxon—Roberts	Failed to finish

Event No. 2

Maxwell—Durham	1:50
Chalmers—Junk	1:51 3-5
Overland—Alsfelt	2:13 2-5
Oakland—Smith	2:42 1-5
Lexington—Rogers	2:56 3-5

Event No. 3

Mercer—Haines	1:49
Maxwell—Durham	1:50
S. S. E.—Emerson	2:05 3-5
Haynes—Conway	2:08 1-5
Mercer—Oliver	2:26
Willys-Knight—McDermott	2:59 3-5

Event No. 4

Packard—Hohl	1:44 4-5
Maxwell—Durham	1:47 1-5
H. A. L.—Turcotte	1:48 3-5
Mercer—Haines	1:49 3-5
Pathfinder—Scholler	1:54 3-5
Winton—Kohl	2:51 3-5

Event No. 5

Maxwell—Durham	1:45 3-5
H. A. L.—Turcotte	1:46
Mercer—Haines	1:48
Pathfinder—Scholler	1:53

Event No. 6

Chalmers—Junk	1:45
S. S. E.—Emerson	1:59 1-5
Haynes—Seaner	2:05

Event No. 7

Pathfinder—Hughson	1:47 2-5
Stutz—Zwally	2:20 1-5
C'ther Duryea—Crawford	2:31 4-5

Event No. 8—Free-for-All

H. A. L.—Turcotte	1:45 3-5
Chalmers—Walden	1:41
Maxwell—Durham	1:45 1-5

—

Christiaens Returns to England

NEW YORK CITY, Oct. 6.—Joseph Christiaens sailed yesterday for England on the *Finland*. He took with him the two Sunbeam racing cars he has been campaigning in America. Mr. Christiaens hopes to return next year after making a number of changes in design based on his experiences of this season.

—

Shields, Anderson's Mechanic, Dies

INDIANAPOLIS, IND., Oct. 9—Bert Shields, mechanician for Gil Anderson, who was injured when their car turned turtle in the recent race at the Cincinnati Speedway, died at his home in Crawfordsville, Ind., Oct. 1. Shields' back was broken. Anderson is recovering.

—

Eastern Canada Show Jan. 20-27

MONTREAL, QUE., Oct. 6—The 1917 National Motor Show of Eastern Canada will be held Jan. 20-27 in the Almys Building, this city. The entire floor-space will be 26,000 ft., all on the third floor.

A large automobile freight elevator will be especially erected for show purposes and there are six passenger elevators and four large stairways.

The 1916 Montreal show was held only in the basement of the same building.

—

Hollier Wins Wager Race

BOSTON, MASS., Oct. 7—As a result of a discussion relative to the merits of six and eight-cylinder cars between dealers at Houlton, Me., a race was arranged between a Hollier eight and a Chalmers six from Houlton to Boston, a distance of 363 miles, and it was run off yesterday. The Hollier was driven by Jake Wise, while A. D. Holyoke drove the Chalmers for George W. Boyer. The arrangements were that the first car to check in at the Adams House, Boston, should win a wager of $500. Both machines left Houlton at 7 in the morning. From that town in the northeast corner of Maine

Records Made in Giant's Despair Hill Climbing

Year	Car	Driver	Time
1906	English Daimler	H. N. Harding	2:11 1-5
1907	Matheson	J. B. Ryall	1:59 2-5
1907	Simplex Peugeot (Motorcycle)	W. H. Wray	1:40
1907	Stanley (Steam Car)	E. W. Harper	1:56 4-5
1908	Great Chadwick Six	Willie Haupe	1:38 2-5
1909	120 h.p. Benz	D. Bruce Brown	1:31 3-5
1909	Indian Motorcycle (7 h.p.)	W. H. Wray	1:41 2-5
1910	Fiat	Dalph De Palma	1:28 2-5

they raced down through Bangor, Portland, Portsmouth, Newburyport to Boston. Wise reached the Adams house at 8:30, in just 13½ hr. He had hardly time to announce his arrival when Holyoke drove up, and he was very much surprised to learn that he had been beaten by 10 min. Both men drove the entire distance without stopping to eat.

—

Suggests Precautions Against Fire

BOSTON, MASS., Oct. 7—Fire Prevention Commissioner of Massachusetts, has sent out some suggestions through the press as to what automobilists can do to aid in making garages safer, and in lessening the dangers from fire in structures where cars are handled. He says that many fires are the result of carelessness, and not paying attention to the laws governing such structures.

—

2 Months for Underspeeding

WORCESTER, MASS., Oct. 7—While thousands of motorists have been arrested and fined for fast driving in Massachusetts the first case where a motorist was brought into court for slow driving occurred here yesterday. Edward C. Smith of Leominster was before Judge Utley on a charge of driving so slowly that he obstructed traffic. Traffic Officer Lyman J. Gorton testified that Smith came along to Harrington corner, the busiest place in Worcester, and he drove his car so slowly that he held up traffic. He was sentenced to 2 months in the house of correction.

—

Two Receivers for Twin-City Speedway

MINNEAPOLIS, MINN., Oct. 7—The Twin City Speedway Assn. now has two receivers. The Hennepin county court has appointed Elijah Barton at the request of the Minneapolis Trust Co., representing the mortgage or bond interests. The previous appointment was in Ramsey county of P. W. Herzog in the interest of creditors. The new receiver has power to protect the property with watchmen and insurance.

—

Device To Prevent Car Overturning

COLUMBUS, OHIO, Oct. 9—The Shilling Automobile Bumper Co., Columbus, has been organized with a capital of $100,000 to manufacture a safety device to prevent automobiles from turning turtle when an accident happens, the invention of E. C. Shilling of Columbus.

E. C. Shilling is president and Jacob Dagger of Urbana, secretary-treasurer. It is planned to open a factory in the Buckeye capital to make the device which can be operated so that the driver instantly can throw heavy bars on either side, when there is danger of overturning.

Mechanics to Share in Race Prizes

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New System of Distribution at Harkness Event—Special 50-Mile Race

NEW YORK CITY, Oct. 7.—A new system of prize distribution in which the mechanics will also come in for a share of the money will be started at the coming Harkness Trophy race on Oct. 28 at the Sheepshead Bay Speedway. A 50-mile special race for non-winners will follow the trophy event. It will carry $2,500 in prizes.

In addition to the $10,000 in prizes for the first six cars to finish the 100-mile race, $2,650 has been set aside to be distributed in lap prizes, 70 per cent of which will go to the driver and 30 per cent to the mechanician.

The bonuses will be awarded to leaders at the end of the various laps as follows:

Miles	Bonus	Miles	Bonus
10	$100	54	$50
12	50	56	50
14	50	58	50
16	50	60	100
18	50	62	50
20	100	64	50
22	50	66	50
24	50	68	50
26	50	70	100
28	50	72	50
30	100	74	50
32	50	76	50
34	50	78	50
36	50	80	100
38	50	82	50
40	100	84	50
42	50	86	50
44	50	88	50
46	50	90	100
48	50	92	50
50	100	94	50
52	50	96	50
		98	50

The regular prize money will be awarded as follows: First, $4,000; second, $2,500; third, $1,500; fourth, $1,000; fifth, $600; and sixth, $400.

—

Connecticut Registrations Gain 33 per Cent

HARTFORD, CONN., Oct. 7—Receipts for the present fiscal year from the registration of automobiles, motorcycles, trucks and individual drivers in Connecticut total $768,727.91, as against $536,970.09 for the corresponding period a year ago, or an increase of approximately 33 per cent. It is expected that the annual business will total $1,000,000.

—

Good Roads Day in New Hampshire

CONCORD, N. H., Oct. 6—Following a proclamation by Governor Spaulding designating last Saturday as Good Roads Day, various motor bodies busied themselves and with the granges doing their share the improvements on highways received a good impetus. At Nashua the automobile club celebrated the opening of the last link in the South Side highway, which joins it to Milford. The Milford Club also joined in the celebration. In Westmoreland, Lyme, East Kingston, Litchfield, Laconia, Londonderry and Keene special work was done. Members of the legislature made addresses and impressed upon the people that it was important to aid in building the smaller roads leading to the State highways.

—

Public Parking Spaces in Boston

BOSTON, MASS., Oct. 7—The Boston Street Commissioners have at last thrown open to motorists the first public parking place in the city, a small section of Boylston Street, where it will be possible to park some 50 machines. A part of Park Square nearby is also under consideration, where a dozen more cars may stand. There is no time limit on their stay.

Cars are allowed to stand against the curb in a few other places such as alongside the Boston Common and on a couple of other streets, but only for half an hour.

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1897 Model Wins Haynes 12

KOKOMO, IND., Oct. 9—The award of the Haynes twelve, offered by the Haynes Automobile Co., this city, to the owner of the oldest car in America goes to Ed J. Howard, of Jeffersonville, Ind. Mr. Howard has an old gear-driven Haynes which he purchased at the factory in the summer of 1897. Since that time the car has been in his possession. After a 19-year period of service in the hills of the Ohio valley, the car is still in running condition. It was the oldest of 140 entries.

—

Brockton Outdoor Show a Success

BROCKTON, MASS., Oct. 6—New England's most pretentious automobile show for an outdoors exhibition held in connection with the Brockton Fair proved to be a success. More than 125,000 people visited the grounds.

There were 125 cars and trucks exhibited. While the greater number of spaces were taken by the Brockton agents, a few were paid for by the Boston dealers. There were forty makes of cars and eight makes of trucks, the latter not including the tractors. In the accessory gallery there were about twenty-five exhibitors.

—

Dimmers Required in Phoenix

PHOENIX, ARIZ., Oct. 6—An ordinance requiring the use of dimmers on automobile headlights, and requiring all drivers of motor vehicles to stop behind standing street cars has been adopted by the city commission under the "emergency clause" and is now in effect. The commission's action followed a series of accidents said to be due to the blinding glare of headlights.

Argentine Trade—Mark Law an Important Factor

(*Continued from Page 629*)

made the subject of a separate application to be paid for separately at the same price which before would have secured the mark for the entire mercantile gamut.

"Under the former ruling it became quite the custom for an applicant to claim all classes of goods, for the simple reason that he could do so without any additional cost. And for the same reason many foreign applicants, on sending their applications through their attorneys, found themselves in absolute control of their particular mark in this country, to the exclusion of all future applicants for the same mark for any kind of goods whatsoever. I venture to state that there are many British and American registrants of Argentine trademarks who are to-day in ignorance of the fact that no other person may register their marks for any class in the Argentine without their consent—a state of things which, quite possibly, they may have neither requested nor desired, and which was only brought about by the thoughtless action of the local attorney or agent.

Foreigners Worst Offenders

"From these circumstances there arose in a great measure the reputation of the Argentine as a trademark pirate, when as a matter of fact the foreigners have been the greatest sinners in this respect—not because the former is so much more upright than the latter, but rather because the greater part of the commerce and industry of the Argentine Republic is carried on by foreigners.

"Now the marks covered by what might be called 'blanket' registration previously to 1912 hold good up to the date of their expiry after a period of 10 years. Then they may be renewed for each or every one of the classes covered, and in the majority of cases this is being done for a limited number of classes, although some even now are willing to pay the registry expenses for each class in order to enjoy the absolute monopoly of their mark. Conditions are therefore becoming more favorable for the registry of foreign marks, and as time passes they will become even more so.

"The above-mentioned conditions have undoubtedly been taken unscrupulous advantage of in many cases, and there have been some notable instances of the legitimate owners of foreign trademarks being forced to pay exorbitant sums to secure the registry here.

"Nevertheless, in the majority of cases where it has been found impossible to register a foreign mark here it has been for natural reasons arising from the facts above indicated. For example, some time ago an American manufacturer wrote to the Argentine consulate: 'We have learned that our trademark has been pirated in the Argentine'; the fact being that the mark in question—the name of a mythological deity—has been registered and in use here by a local firm in the same line of business for more than 40 years, or some 10 years before the existence of its accuser.

Business Relations

"A phase of this subject which should receive earnest and impartial attention is that which refers to the relations between foreign manufacturers and their Argentine representatives. So little attention has been generally given to the appeals of the latter for protection by registry of trademarks that it has become almost the universal custom for any firm here, before making deliveries of an article bearing a new trademark or name, to register the same at once in order to forestall the unscrupulous action of anyone who might attempt to do so for speculative purposes. The foreign manufacturer is usually advised of such registry by the representative or agent, and in nine cases out of ten pays no attention to the offer of the latter to transfer the registry in consideration of reimbursement of the expenses incurred. As time goes by question may arise between the two parties, and the agent finds himself in possession of a defensive weapon which he had not thought of using for that purpose but which he believes himself justified in doing.

"Now, it is undoubtedly true that manufacturer and agent have or should have equal interest in building up a good business. It is equally true that although the manufacturer may act in perfect good faith, it is frequently impossible for him to give absolute protection to the agent, for the reason that the goods may be bought through commission houses and shipped to the agent's competitors without the knowledge of his principal. The only way to fully protect the local agent as the exclusive importer of his principal's product is to have the mark under which the goods are sold registered in his name. This can be done with perfect safety to the manufacturer by executing the proper document whereby the registry will revert to the manufacturer on termination of the agency contract.

"For example: If the foreign manufacturer makes a contract with an Argentine representative whereby the former is to ship his product exclusively to the latter, and if competitors here secure the same goods through other channels and put them on the market at cost or at least lower than the 'exclusive agent' can afford to do at a fair profit (a thing, by the way, which has been repeatedly done), the 'exclusive agent' has no redress whatever if the trademark under which the goods are sold is registered in the name of the foreign manufacturer, since in spite of the production in court of the exclusive agency contract the competitor, on proving that the goods sold bore the genuine trademark of the manufacturer in whose name it was registered, and that the goods were genuine, would be absolved by the court with costs to plaintiff.

"But if, on the contrary, the trademark is registered in the name of the local agent, he is then in a position to completely protect his interests in such a case, and incidentally the real interests of his principal. I would therefore recommend that in such cases the trademark, if already registered, be transferred to the agent during the period of the exclusive agency contract.

Too Much Protection

"But the question will naturally arise, Does registration of the trademark in the Argentine really give protection? And the reply is—*Too much protection!* I mean that the protection is so strong as to be dangerous when in unscrupulous hands. A few plain facts without any comment whatever will make this evident to the judicial mind. These are the facts:

"1. The penalty for infringement includes fine and imprisonment.

"2. The imprisonment is not redeemable by payment of money.

"3. The suit is thus of a semi-criminal nature.

"4. *But suit may be withdrawn by plaintiff at any time before sentence is pronounced!*

"It is almost unnecessary to state, in view of the above, that the majority of infringement cases which might otherwise enrich Argentine jurisprudence never come to sentence.

"There are two notable exceptions to the general rule that first registry entitles registrant to the mark as against first use. Proper names and portraits of persons are protected to the fourth generation of the heirs, and the courts have repeatedly restored to the foreign claimant a registered mark containing or consisting of a proper name, or even the name of a company or corporation. The names of commercial firms doing business and duly matriculated in the Argentine are protected without being registered as trademarks, although it is quite usual to so register them or as a part of the mark. But foreign firms have no such common-law protection, and their names should be registered as trademarks or in connection with the same."

(Next week the various classifications for the trademark law will be given.)

Factory Miscellany

Metal Parts Company to Build—The Metal Auto Parts Company, Indianapolis, Ind., has completed plans for the erection of an $80,000 building.

Cadillac in Toledo—The Toledo-Cadillac Co., Toledo, Ohio, has taken a long lease on the building at the northwest corner of Madison Avenue and Eleventh Street, formerly occupied by the Lichtie Auto Co. and has occupied it as an exclusive salesroom for used cars.

Million-Gal. Pumping Engine for Firestone—The Firestone Tire & Rubber Co., Akron, Ohio, has placed an order with the Milwaukee works of the Allis-Chalmers Mfg. Co. for the manufacture and installation of a 1,000,000-gal. high-pressure pumping engine for its Akron shops.

New Upholstery Company in Chicago—L. J. Blumenthal, connected with the automobile and carriage trimming business for the past five years, has entered business for himself under the name of Blumenthal Brothers, to carry a line of automobile and carriage trimmings at 115 West Lake Street.

Westgard Plant Started—The Westgard Tire & Rubber Co. has started work on its plant in Warren, Ohio. The main building will be 140 ft. wide and 350 ft. long. Next to the main building the powerhouse, 40 by 40, will be built. Two hundred men will be employed at the start. This number is to be doubled in the near future.

Ind. Factory Activities—The South Bend Motor Car Co. has closed a deal with New York City whereby the South Bend concern is to build 10 fire trucks for the use of the metropolis. The trucks will be similar to those in use in South Bend.

The laying out of the foundation for the fourth building to be erected by the Bowser Oil Tank & Pump Works, Fort Wayne, this year has been commenced. The building will be used for storage purposes and will measure 80 by 150 ft.

The Advance-Rumely Co. of Laporte, Ind., is experimenting in the manufacture of an all-steel tractor. Heretofore considerable wood has gone into the construction of tractor bodies. Recently the possibility of manufacturing an all-steel tractor gained headway in the Rumely offices, and Chris. Nyberg, one of the company's draughtsmen, was detailed to the Battle Creek, Mich, offices of the company and help in the plans of getting out an all-steel tractor. Mr. Nyberg says he believes the experiment is a success since the work has been completed.

Wis. Factory Items—The Western Malleables Co., Beaver Dam, which introduced a line of automobile parts several months ago, to supplement its output of railroad and other malleable castings, is enlarging its facilities to properly accommodate the large volume of business being booked in both directions. The Elm Street plant at Beaver Dam is being enlarged by the erection of a 53 by 120-ft. addition, and a new core room, 90 by 26 ft., and a new sand shed are being added to the South Street plant.

The Osborne Casting Co., Racine, is the name of a new concern which is establishing a grey iron foundry in Racine to cater to manufacturers of automobile engines and complete cars. The backers are J. H. Osborne and C. G. Holmes, experienced foundrymen. More than $20,000 is being expended in the erection and equipment of a new foundry at Layard Avenue and the North-Western tracks, and this plant will be ready for operations on or before Jan. 1. Forty to 50 men will be employed at the start.

The Gillette Safety Tire Co., Eau Claire, will be ready to start manufacturing Nov. 1, according to present plans. The first unit of the new factory is now completed and the equipment and machinery is being installed. Ground has been broken for the office building, which will be 50 by 80 ft. in size and conform to the outline of the factory.

The Waukesha Motor Co., Waukesha, will break ground Oct. 15 for the erection of a new office building and draughting shop, to be 44 by 88 ft. in size, two-story and basement. The plant is being enlarged to accommodate the unprecedented demand for engines for pleasure and commercial cars and tractors.

The Automobile Calendar

ASSOCIATIONS

Oct. 13—Flint, Mich., Fall Meeting National Assn. of Automobile Accessory Jobbers.

Oct. 25-26—Columbus, Ohio, Automobile Trade Assn., second annual meeting, Virginia Hotel.

Dec. 2-9—Electricians' Country-wide Celebration.

Jan. 9-11—New York City, Society of Automobile Engineers Mid-Winter meeting, Thursday, Jan. 11, S. A. E. day. Annual Banquet, Hotel Biltmore, Special performance Ziegfeld's Midnight Follies.

CONTESTS

Oct. 7-14—Troy, N. Y., Show, Motor Mart Bldg.

Oct. 14 — Chicago Speedway Race.

Oct. 19—Indianapolis, Ind., Race, Indianapolis Motor Speedway.

Oct. 21 — Kalamazoo, Mich., Track Races, Kalamazoo, Motor Speedway.

Oct. 22-23—Los Angeles, Cal., Commercial Car Reliability Tour.

Nov. 16 and 18—Santa Monica, Cal., Vanderbilt Cup and Grand Prix Races.

Nov. 18—Phoenix, Ariz., 100-mile free-for-all Track Race, Arizona State Fair.

1917

April—Los Angeles to Salt Lake City Road Race.

May 19—New York Metropolitan Race on Sheepshead Bay Speedway.

May 30—Indianapolis Speedway Race, Championship.

June 9—Chicago, Ill., Speedway Race, Championship.

June 23 — Cincinnati, Ohio, Speedway Race.

July 4—Omaha, Neb., Speedway Race, Championship.

July 14 — Des Moines, Iowa, Speedway Race, Championship.

July 28—Tacoma, Wash., Speedway Race, Championship.

Aug. 4—Kansas City Speedway Race.

Sept. 8—Cincinnati, Ohio, Speedway Race, Championship.

Sept. 15 — Providence, R. I., Speedway Race, Championship.
Race, Championship.

Sept. 29—New York, Speedway

Oct. 6—Kansas City Speedway Race.

Oct. 13—Chicago Speedway Race.

Oct. 27—New York Speedway Race.

SHOWS

Oct. 9—Kansas City, Mo., Fourth Annual Trade and Booster Tours, Kansas City Motor Car Dealers' Assn.

Oct. 14-21 — Pittsburgh, Pa., Thirteenth Annual Show, Motor Square Garden. Automobile Dealers' Assn. of Pittsburgh.

Oct. 14 - 21 — Dallas, Texas, Show, State Fair.

Nov. 10-18—Providence, R. I., Show, Rhode Island Automobile Dealers' Assn.

Dec. 2-9 — Springfield, Mass., Show, Auditorium. H. W. Stacey, Mgr.

Dec. 30-Jan. 6—Cleveland, Ohio, Sixteenth Annual Show, Wigmore Coliseum, Cleveland Automobile Club.

Jan.—First Pan-American Aeronautic Exposition, New York City; Aero Club of America, American Society of Aeronautic Engineers, Pan-American Aeronautic Federations.

Jan. 6-13, 1917—New York City, Show, Grand Central Palace, National Automobile Chamber of Commerce.

Jan. 20-27—Montreal, Que., Automobile Trade Assn.

Jan. 27-Feb. 3, 1917 — Chicago, Ill., Show, Coliseum, National Automobile Chamber of Commerce.

Feb.—Newark, N. J., Show, First Regiment Armory.

Feb.—Minneapolis, Minn., Show, National Lamp Co. Factory.

Feb. 10-18—San Francisco, Cal., Pacific Automobile Show, G. A. Wahlgreen, Mgr.

Feb. 18-25—St. Louis, Mo., Show, Auto Manufacturers' and Dealers' Assn.

Feb. 3-10—Minneapolis, Minn., Show, Minneapolis Automobile Trade Assn.

Feb. 26-March 3—Omaha, Neb., Show; Auditorium, Omaha Automobile Show Assn.

March 3 - 10—Boston, Mass., Show, Mechanics' Bldg., Boston Automobile Dealers' Assn.

March 6-10—Ft. Dodge, Iowa, Northern Iowa Show, New Terminal Warehouse, G. W. Tremain, Secretary.

TRACTOR

Oct 14-29—Dallas, Tex., Demonstration, Texas State Fair.

The Week in the Industry

Pomeroy Joins Michigan Motor Car Co.—B. H. Pomeroy, M.E., for several years connected with the Dayton Motor Car Co., The Mead Engine Co. and Rapid Motor Vehicle Co. as chief engineer and superintendent, has been appointed factory manager of the Michigan Motor Car Co., Detroit. Mr. Pomeroy was formerly connected with the DeDion-Bouton Motor Car Co. of Church Lane, Brooklyn, N. Y., also with the Locomobile Co. and the Mobile Co. in the steam car days.

Wiese Made Studebaker Branch Manager—J. S. Wiese has been appointed to be branch manager for the Studebaker Corp. at Buffalo. He succeeds J. O. Hahn, who formerly operated the Studebaker branch at Cleveland and who is now the treasurer of the Studebaker Sales Co., which is the result of the merger of the Blevins Auto Sales Co. of Toledo and the Davis Motor Car Co. of Cleveland.

Louisville Items—The Louisville branch of the Ford Motor Co. will discontinue selling cars and parts at retail.

Seven agents have been appointed to handle the Ford in this city. They follow:

Atlas Machine Co., 728 West Market; Browder & Hoskins, 628 South Third; Broadway Motor Sales Co., 1012 East Broadway; F. P. Harter, 1064 Bardstown Road; Louisville Motors Co., Jackson and Broadway; Monarch Auto Co., 206 East Broadway; Roy E. Warner Co., 928 South Third.

Canadian Trade—George Primm has been appointed the West End representative for the sale of Ford cars and has opened temporary show rooms at 4280 St. Catherine Street, West Montreal.

Clermont & Rousseau have opened Ford show rooms at 994 St. Denis Street, Montreal.

The East End Garage, 789 Berri Street, Montreal, have taken on the representation of the Stanley steamer for Montreal.

Hartford News—The R. D. Britton Co., Allyn and High Streets, Hartford, Conn., is to take over the second floor of the building now occupied when the Universal Auto Co. removes to the new concrete sales and service building on Allyn Street. It is expected that the change will be made about Dec. 1.

Charles Ledgard of the sales department of Metcalfe & James, 134 Church Street, Firestone distributors, has been appointed manager. He assumes the new post this week. R. B. Metcalfe of the firm has returned to New York and will remain there until next spring, when he will return.

The Reid Motor Co. is to take over the salesroom of the Hartford Buick Co. at 356 Main Street as soon as the latter concern can renovate the recently acquired Park Casino on Elm Street, which is to be a combined sales and service building. The Reid company will also take over a portion of the new Buick service building on upper Elm Street and will release the present salesroom at 278 Main Street.

G. H. Gabb, Hartford, Conn., Auburn, Haynes, Kelley truck and Smith Form-A-Truck representative, has removed his sales office to 278 High Street.

Nine manufacturers accepted the invitation of the Automobile Club of Hartford for a public demonstration of dimming devices at Charter Oak Park this week. Each device was given a separate trial, after which lunch was served by the club at the Allyn House. The various representatives then explained their devices.

Wash. Trade Activities—Realizing the importance of Tacoma as a trade center and distribution point for southwest and central Washington, the Firestone Tire & Rubber Co. has established a direct factory branch at 705 Commerce Street. It is under the management of E. A. Stewart.

Form May-Kelleher Co.—A. C. F. Kelleher and H. H. May have formed the May-Kelleher Co., Pittsburgh, and will handle Pierce-Arrow cars. Kelleher has for the last 4 years been connected with the Foss-Hughes Co., Philadelphia, Pierce-Arrow dealer.

Philadelphia Items—The Packard Motor Car Co. is having plans prepared for an eight-story concrete building to be erected at Broad and Wood Streets. It will measure 70 by 180 ft.

The Fanning-Mathis Co. has leased the garage in the new building now being erected at 1611-15 Vine Street, and will use it as a service station.

Oliver Brothers, 600 North Broad Street, Philadelphia, have added the Roamer.

Edward Wilkie has formed the Wilkie Motor & Supply Co. and will handle Buick sales in that city on an exchange car basis at 677 North Broad Street.

Ariz. Trade News—The Babbitt-Polson Co., Phoenix and Flagstaff, has been appointed Arizona agent for the Jordan cars, and will also act as distributor for New Mexico and part of west Texas. M. L. Burkhead, formerly with the Haynes sales agency of El Paso, has been appointed salesman by the Babbitt-Polson Co. in the territory mentioned.

Controlling interest in the southern Arizona Motor Co., Tucson, Buick agent, has passed from B. A. Snow to C. Edgar Goyette, S. E. Lannis, H. M. Hartley and F. E. Patterson. Goyette is president of the company under the new organization, and S. E. Lannis is car sales manager. H. M. Hartley will have charge of the tire and accessory department of the company.

Boston Changes—F. A. Hinchcliffe, for many years manager of the Winton Motor Car Co.'s branch at Boston, Mass., in charge of the New England district, has resigned to become agent for the Jordan car there.

P. L. McKinney, assistant manager of the Peerless company at Boston, has taken the Maine and New Hampshire territory for that line, with headquarters at Manchester, N. H.

Columbus News Items—W. R. Jones & Co. have taken the central Ohio distributing agency for the Prismolite headlight lens, made by the Standard Glass Specialty Co., Morgantown, W. Va.

Fred A. Walz, formerly a harness dealer at 325 South High Street, has opened a store to handle automobile tires and accessories at the same location.

E. W. Penton, connected with the Service Garage at 122 Fourteenth Avenue, has taken the central Ohio agency for the General Vehicle Co., maker of electric trucks.

The Ensign Motor Car Co., Springfield, Ohio, has taken the agency for the Empire in that city and surrounding territory.

Cruikshank, Son & Robbins, central Ohio agents for the Pathfinder and Briscoe, have moved into new quarters at 151-155 North Fourth Street.

New England Trade Items—Crosby Adams, who has just become manager of the Mitchell and Saxon agencies at Springfield, Mass., has taken on the Jordan car.

The S. L. Crosby Co., Bangor, Me., has secured the Maxwell agency for central Maine.

An agency for the General Motor trucks has been placed with the Western Massachusetts Cadillac Co., Springfield, Mass. It has three Massachusetts and one Vermont county.

The Grant Six car has been taken on by the Walter F. Kelley Co. at New Haven, Conn.